NETWORK WORLD
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Trucker gets an edge with tracking net

By Paul Desmond
Staff Writer

DENVER — Trans-Western Express Ltd. (TWX) has gained a competitive edge on much larger transportation companies with a satellite truck-tracking system that is helping it win lucrative shipping contracts.

TWX, based here, operates a fleet of only 180 trucks. Yet it distinguishes itself from bigger rivals by providing customers with detailed information on the location of their shipments at a moment's notice.

The satellite network also features a monitoring system for refrigerated trucks that triggers alarms when temperatures exceed preset parameters, giving TWX time to remedy the problem or send a replacement truck before cargo is damaged or destroyed. The system also gives the company credible evidence against claims that proper temperatures were not maintained during shipments.

In addition, the tracking network has increased productivity and pay for TWX drivers, who no longer waste valuable time calling headquarters to report their locations.

The Tracker I truck-monitoring system supports monitoring

(continued on page 9)

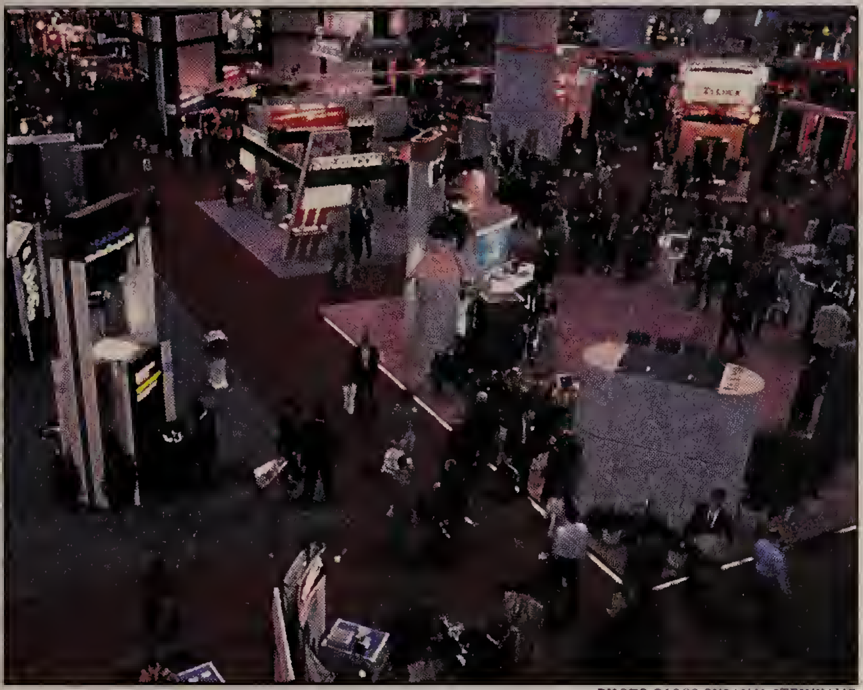

PHOTO ©1989 SUSAN V. STEINKAMP

Conference-goers hit the exhibit floor at last week's ComNet '89.

Apple executives respond to criticism of DEC deal

Officials say work to tie Macs into DECnet going smoothly, product rollout will begin this August.

By Laura DiDio
Senior Editor

NEW YORK — Top Apple Computer, Inc. executives last week answered critics who have slammed the company's year-old alliance with Digital Equipment Corp. because it has yet to produce any Macintosh-to-VAX connectivity offerings.

In interviews at last week's DEXPO East '89 trade show here, Apple officials said the two firms have achieved all they set out to do. The companies have spent the last year designing an application architecture that can be easily supported by independent software developers.

The first products of the alliance, such as VAX-based server software supporting Macintosh net protocols, will begin to arrive in August, the executives said.

"We have done everything we said we'd do," said Peter Hirshberg, Apple's manager of multivendor integration. "The alliance is going well, and we're on target

(continued on page 40)

AT&T takes wraps off crossbred PBX

Definity 75/85 debuts at ComNet '89; combines capabilities of System 75, System 85 switches.

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — AT&T last week delivered on a longstanding promise to consolidate its private branch exchange line with the introduction of the Definity 75/85 Communications System, a PBX that marries the capabilities of the company's System 75 and System 85.

Definity, unveiled at the Communication Networks Conference and Exposition '89 here, combines the high-density circuit packs and modular cabinets of the mid-range System 75 with the call-processing capacity, networking capabilities and advanced features of the high-end System 85.

AT&T's strategy in unveiling the new switch is to ease upward migration for System 75 users and provide System 85 users with a smaller, more powerful switch that can be networked easily.

Users of AT&T PBXs applauded the introduction of Definity, some saying they have already placed orders for the switch. Analysts said the consolidation of the PBX line will help AT&T retain users that might otherwise migrate to other vendors' switches.

Definity will be offered in two models, each of which supports Integrated Services Digital Network interfaces and uses the same memory and interfaces to applications on adjunct comput-

(continued on page 43)

PHOTO ©1989 SUSAN V. STEINKAMP

IBM VP Ellen Hancock chats with NTIA chief Alfred Sikes before her keynote speech at ComNet '89.
For show coverage, see pages 2, 7, 8, 13 and 23.

MCI View, switched 56 services bow

By Bob Brown
Senior Writer

WASHINGTON, D.C. — MCI Communications Corp. last week delivered a promised network management service that works with IBM's NetView and joined rivals AT&T and US Sprint Communications Co. in offering a switched 56K bit/sec data service.

MCI, which made the announcements at the Communication Networks Conference and Exposition '89 here, said its new MCI View net management service is the first in a family of Integrated Network Management Services (INMS) it plans to deliver this year.

The carrier initially outlined

(continued on page 43)

NETLINE

PRIME AND NOVELL join to develop the first Unix-based version of NetWare. Page 2.

DG SPELLS OUT its multivendor network strategy and unwraps a line of OSI-compatible products. Page 2.

A TOP AT&T EXEC, speaking at the ICA's Winter Seminar, outlines plans for global ISDN services. Page 6.

LONG-HAULER WillTel purchases Lightnet for $365 million. Page 6.

UP IN ARMS, Martin Marietta and MCI ask the government to overturn AT&T's award for the FTS 2000 contract. Page 6.

NETWORKING technology is helping the medical community adjust to new fiscal realities. Page 28.

NEWSPAPER

FEATURE

Deregulation drives new Australian services

By Kathryn Korostoff
Special to Network World

Despite what many Americans may think, Australia is not just a vast outback populated solely by koala bears, kangaroos and Crocodile Dundee. And although the "land down under" may seem remote because it's an ocean and a hemisphere away from us, it isn't isolated communications-wise: There is a wide variety of voice and data communications services available within Australia and between that country and the U.S.

Furthermore, because of the recent deregulation of the Australian telecommunications industry, the number of such services is increasing. This means U.S. businesses that are aware of their options will be able to communicate quickly and easily with clients and offices in Australia.

Currently, all Australian telecommunications services are provided by three government-owned groups, called instrumentalities: Telecom Australia, AUSSAT and the Over-

(continued on page 31)

Prime, Novell to jointly build Unix-based NetWare

Companies to develop two versions of NetWare to run on Prime's EXL supermicrocomputer line.

By Jim Brown
New Products Editor

NATICK, Mass. — Prime Computer, Inc. and Novell, Inc. are expected to announce this week a strategic alliance through which they will develop the first Unix-based version of NetWare.

Under the agreement, the companies will develop two versions of NetWare that will run on Prime's EXL line of supermicrocomputers, which are based on Intel Corp.'s 80386 microprocessor and Multibus II architecture. One version will run under AT&T's Unix System V.3, effectively creating a NetWare server that can connect to Prime's minicomputers or to other vendors' systems.

The companies also will create a version of NetWare that runs stand-alone on the EXL, allowing users to employ the device as a network file server. In doing so, the companies are rewriting NetWare by adding operating system features and drivers to the EXL's Multibus II.

Development of a Unix-based NetWare server positions Novell squarely against Microsoft Corp., which has signed up Hewlett-Packard Co. and AT&T to develop Unix versions of its LAN Manager.

The agreement between the two companies also opens the door for development of other Unix/NetWare server software products since both companies agreed to license the resulting software to other vendors. These vendors could then recompile it to run with other Unix variations.

Prime hopes the licensing strategy will make the jointly developed Unix/NetWare server software an industry standard. "We don't care what version of Unix [vendors are] running," said Gerald Kokos, senior director of Prime's distributed computing business group. "As long as they're on Intel [microprocessors], we'll work with them."

Due out early next year, the Unix/NetWare server software will give NetWare users access to Unix-based applications running on the EXL. It will also enable terminals directly attached to the EXL to access NetWare applications.

Also due out next year are software gateways that will link devices attached to the Unix-based NetWare server to X.400-compatible electronic mail nets. In addition, the gateways will link the server to larger Ethernets

(continued on page 43)

DG unveils multivendor net strategy, OSI products

Firm also joins OSI/Network Management Forum.

By Bob Brown
Senior Writer

WASHINGTON, D.C. — Data General Corp. last week outlined its multivendor networking strategy, unfolding a line of products based on the Open Systems Interconnection model.

The Westborough, Mass.-based minicomputer maker also announced at the Communication Networks Conference and Exposition (ComNet) '89 here that it has joined the OSI/Network Management Forum. The Bernardsville, N.J.-based group is creating a profile based on OSI management protocols for vendors to use in designing interoperable net management wares.

DG's OSI strategy gives the company an above-average position in the OSI market, which already has backing from such notables as IBM, Digital Equipment Corp. and Hewlett-Packard Co. DG's decision to move more fully into OSI before many of its competitors may prompt third-party vendors to write their OSI applications to DG's offerings, said James Herman, a principal at Northeast Consulting Resources, Inc., a consulting firm in Boston.

Aside from arriving on the scene early, DG's OSI strategy does not appear to be much different from the approach taken by other vendors, such as DEC, Herman said. DEC is taking a gradual approach, working on lower levels products now and stressing DECnet for upper layers, he said.

Peaceful coexistence

DG's multivendor networking strategy, which is based on its DG/OSI Communications Architecture, is designed to let users of the firm's existing Xodiac networking architecture coexist or easily migrate to OSI multivendor networks, said Joseph Forgione, DG's director of communications product marketing.

At the ComNet show, DG introduced three OSI packages that run on the company's Eclipse MV minicomputers and support its DG/OSI Communications Architecture.

The firm's DG/File Transfer,

(continued on page 6)

Briefs

FCC seeks petition response. Users commenting on a BellSouth Corp. petition to provide signal-control features with its T-1 service have until tomorrow to file responses with the Federal Communications Commission.

BellSouth asked the FCC last December for permission to use smart jacks at customers' premises to conduct loop-back tests. These tests would be run from central offices over the same portion of the T-1 line that carries voice and data. This method would eliminate the need to send maintenance personnel to conduct tests.

An opposing petition, filed by the Independent Data Communications Manufacturers Association, Inc. (IDCMA), warns that the plan could result in increased costs, duplication of existing customer premises equipment functionality and additional points of net failure. Existing attenuation features provided in customer-owned channel service units would be rendered superfluous, the IDCMA said. In addition, customers would have to rely on carrier personnel to service the jack in case of failure, an IDCMA member said.

AT&T/Italtel deal gets nod. The government holding company for Italy's nationalized industries, Instituto per la Riconstruzione, last week approved a plan for AT&T to work with Italtel S.p.A., the state-owned telecommunications company, to revitalize the nation's telecommunications systems. The only obstacle left in AT&T's bid to clinch a large piece of one of Europe's largest telecommunications upgrades — $25 billion over the next four years — is approval from Italy's minister for state participation, whose decision is forthcoming.

Word from the Hill. The U.S. needs a telecommunications policy to meet the challenge of foreign competition, said Sen. Ernest Hollings (D-S.C.) at the International Communications Association's Winter 1989 Seminar in Arlington, Va., last week.

"There is a silly singsong of free market, free market, which is going to put us in a trade war," Hollings said. "In national telecommunications, we don't have a policy, and we need it."

The senator did not specify what this policy should entail, although he said it could include tariffs on imported communications equipment. In his position as chairman of the Senate Commerce, Science and Transportation Committee, which oversees the Subcommittee on Telecommunications, Hollings is the country's highest ranking senator overseeing telecommunications legislation.

Novell denies sale discussions. Novell, Inc.'s stock rallied late last week, finishing the week up half a point, due to reports that the Provo, Utah-based local net vendor is holding acquisition talks with AT&T.

Novell President and Chief Executive Officer Raymond Noorda flatly denied the reports. "The rumors don't fit," he said. "We're not talking to anybody, and AT&T isn't talking to anyone inside the company regarding an acquisition."

CONTENTS

Industry Update
Following a year in which Sears, Roebuck put its famed Sears Tower headquarters up for sale and saw its retail business sag, its Sears Communications arm is aiming to pick up some of the corporate slack. **Page 11**

Telecommunications
Users will continue to rely on both satellites and fiber-optic cables for international telecommunications well into the next century, according to a recent COMSAT study. **Page 13**

Data Communications
The ISO is expected to publish the final version of its VT standard soon, but analysts expect it will be at least a year before VT begins replacing existing terminal protocols in users' networks. **Page 15**

Local Networking
Even though the market for data base servers should heat up next month with the long-awaited release of Microsoft's SQL Server, users are taking a wait-and-see attitude toward the emerging local net technology. **Page 17**

Management Strategies
The continued resistance of major microcomputer software publishers to offer site licensing is forcing net managers to buy distributed applications for local nets in yesterday's packaging. **Page 21**

Products & Services
Alantec introduces a high-speed Ethernet bridge, dubbed the Multi LAN Switch, that it says will alleviate bottlenecks caused by large data transfers. **Page 23**

Inside
Opinions **26**
Networking Marketplace **37**
Calendar **42**

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AT&T to work with UK, Japan in global ISDN link

By Barton Crockett
Senior Editor

ARLINGTON, Va. — A high-level AT&T executive last week disclosed that the company is working with carriers in the UK and Japan to offer international Integrated Services Digital Network services.

At the International Communications Association's (ICA) Winter 1989 Seminar here, Rodney Strum, AT&T's director of international marketing, said the carrier is working with British Telecommunications plc in the UK and Japan's Kokusai Denshin Denwa Ltd. (KDD), an international carrier, to offer international ISDN Basic Rate Interface service.

Strum said the carrier will probably announce the project in two months but has not yet filed a tariff for the service.

Currently, AT&T offers domestic ISDN Primary Rate Interface service but has not yet introduced Basic Rate Interface service. The Basic Rate Interface, or 2B+D, standard supports two 64K bit/sec bearer channels for voice and data and an out-of-band signaling channel.

Major step for ISDN

Users at the conference said the agreement would be a major boost for ISDN and would greatly expand its reach by letting users communicate with sites globally over the integrated voice/data networking system.

Executives from several other major carriers said the reach of ISDN will be extended even further through other global ISDN interconnections now in the works. Strum said that, in the next several months, AT&T will announce an ISDN interconnection to Telecom Canada, an Ottawa-based organization comprising major Canadian communications carriers.

In addition, Michael Ford, president of British Telecom International, Inc., the U.S. subsidiary of British Telecom, said his company is arranging ISDN interconnections with public carriers in Germany, France and Italy.

Ford added that AT&T and British Telecommunications plc have approached other carriers about interconnecting ISDN services. He said both companies pitched the idea in a recent meeting with representatives from 20 carriers from around the globe.

"These kinds of announcements are very significant," said Lawrence Gessini, manager of telecommunications for Agway, Inc., in Syracuse, N.Y. "They are the first big step to making ISDN an ubiquitous, international transmission medium."

Strum said AT&T's ISDN interconnection with KDD and British Telecom would support three applications: automatic number identification and two unspecified services for users in the financial and airline industries.

Access to the international

(continued on page 43)

FTS 2000 losers ask GSA to overturn AT&T award

Martin Marrietta, MCI cry foul on Tariff 16 filing.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — Martin Marietta Corp. and MCI Telecommunications Corp. last week protested AT&T's tariff filing for Federal Telecommunications System (FTS) 2000, asking the government to overturn AT&T's contract award and reopen bidding on the network deal.

MCI filed a protest with the U.S. General Services Administration's Board of Contract Appeals, claiming that AT&T's recent Tariff 16 filing, which covers services to be provided under FTS 2000, fails to conform to GSA contract requirements.

Martin Marietta filed a letter of protest with Carol Hall, the contracting officer who evaluated FTS 2000 bids, also alleging that AT&T's tariff does not comply with contract requirements.

Martin Marietta was the prime contractor and MCI was a subcontractor on a team that lost out in bidding for the FTS 2000 contract, which could be worth up to $25 billion over 10 years. A spokesman for Martin Marietta said the company was aware that MCI filed a protest but said that Martin Marietta's protest was separate from MCI's. He declined to comment on why the companies are filing separately.

Representatives from AT&T, which won 60% of the FTS 2000 contract, and the GSA, which oversaw the bidding process, expressed confidence that the protests would not hold up implementation of the huge government network. AT&T said it believes its FTS 2000 tariff is in full compliance with requirements of the contract.

Robert MacKichan, general counsel for the GSA, questioned whether MCI has legal authority to file a protest since it was not the prime contractor on the bid. He said it must also be determined whether the protest is valid since a protest usually must be filed within 10 days of the award date. He added that the protests would not suspend FTS 2000 procurement activities.

Shortly after the contract was awarded in December 1988, Martin Marietta said it would not protest the GSA decision. In a statement last week explaining the turnaround, the company said its complaints were based on information from AT&T's Tariff 16, which was not filed wth the FCC until Jan. 24.

In the protest letter, Martin Marietta said AT&T's Tariff 16 filing for FTS 2000 failed to comply with several restrictions imposed by the GSA on services to be offered under a tariff. Although the GSA specified that tariffs must state that AT&T, and not the government, would suffer losses if regulators raised service rates, the AT&T tariff fails to include such language, Martin Marietta said.

AT&T's tariff also fails to include language detailing rate caps that were negotiated with the GSA for some services, Martin Marietta said. For example, it was agreed that charges for switched voice service would not exceed the lowest publicly available rate from AT&T, MCI or US Sprint Communications Co., the other FTS 2000 supplier.

MCI's protest to the Board of Contract Appeals claimed that AT&T's tariff filing is not legal because it fails to include public rates. In filing its tariff for FTS 2000 services, AT&T asked that its rates be kept secret since it must rebid on prices during the fourth and seventh years of the contract. US Sprint does not have to reveal its rates.

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WillTel buys up Lightnet for $365m

By Wayne Eckerson
Staff Writer

TULSA, Okla. — Long-distance carrier Williams Telecommunications Group, Inc. (WillTel) said last week it has signed an agreement to purchase Lightnet, also a long-haul company, for $365 million in cash.

The deal, which received favorable reviews by WillTel customers, strengthens WillTel's position as one of the top long-distance carriers behind the big three of AT&T, MCI Communications Corp. and US Sprint Communications Co., analysts said. The deal is expected to be finalized in early April.

WillTel primarily markets transmission services to other long-distance carriers but also provides T-1 service to some large users. The acquisition of Lightnet increases the size of its network by about 60%.

The combined net would span 11,000 route miles, serve most major U.S. cities and consist of fiber-optic and microwave links.

"WillTel is an aggressive company; its acquisition of Lightnet will stretch its geographic reach and bring it greater savings through economies of scale," said Robert Self, president and owner of Market Dynamics, a New York consulting firm.

Currently, WillTel's network primarily operates in the West and Midwest and consists of 6,400 route miles of fiber lines and 800 route miles of microwave links. Lightnet's all-fiber network, on the other hand, stretches 4,500 route miles, primarily on the East Coast.

WillTel is the largest member of the National Telecommunications Network (NTN), a consortium of five regional carriers that exchange traffic to provide nationwide long-distance service.

"Combining Lightnet's network with our own and NTN's will provide our customers with more redundant and diverse routes, and ultimately better service," said Roy Wilkens, president of WillTel.

Lightnet's owners — Southern New England Telecommunications Corp., a local exchange carrier holding company in New Haven, Conn., and CSX Corp., a Jacksonville, Fla.-based international transportation company — decided to sell the carrier to focus on their core businesses, a Lightnet spokeswoman said.

Users of WillTel's network said they are happy with the purchase. FMC Corp., a chemical and equipment manufacturer in Chicago, currently uses three T-1 lines from WillTel and two lines from Lightnet. Consolidating the lines under WillTel will give FMC a bigger discount on long-distance services and provide single-vendor contact, said Robert Mhoon, manager of telecommunications engineering at FMC.

Donald Watson, director of telecommunications for Atlantic Richfield Co., a large oil producer based in Dallas and a customer of WillTel, applauded the acquisition. "WillTel is a well-organized operation that we have great confidence in," he said.

DG unveils multivendor strategy

continued from page 2

Access and Management (DG/FTAM) software package lets DG users on OSI-based nets exchange files with other vendors' systems that support FTAM software. DG/FTAM, which will be available at the end of this year, will cost between $1,500 for an Eclipse MV/1400 processor and $17,400 for an Eclipse MV/40000 HA Model IV.

Tool kit for resellers

DG/OSI Applications Platform Interface (DG/OAPI) is a software tool kit that enables value-added resellers and advanced users to create OSI seventh-layer applications that can communicate across multivendor nets. The software, which requires DG's DG/OSI Transport Services (DG/OTS), could be used to write a utility for program-to-program communications, such as those for updating transactions between a bank's branch and its headquarters, said Robin Cohan, DG's product manager for OSI networking products.

DG/OAPI, which is scheduled to ship in the fourth quarter, will cost from $2,500 for an Eclipse MV/1400 to $29,500 for an Eclipse MV/40000 HA Model IV.

DG/OTS is a software package that supports the OSI protocols that help establish connections and route data in an OSI net. A superset of DG's existing Xodiac Transport Services offering, DG/OTS provides routing and end-system transport services over local- and wide-area nets.

DG/OTS, which is expected to ship in the fourth quarter, will cost from $900 for an Eclipse MV/1400 to $10,440 for an Eclipse MV/40000 HA Model IV.

DG previously announced the DG/X.400 OSI-compliant message-handling system and the DG/Open Network Management System, which are also part of the company's DG/OSI Communications Architecture strategy.

The DG products will be most useful once other vendors deliver similarly compatible OSI products, Cohan said. At the ComNet show, DG demonstrated compatibility between its FTAM product and an OSI offering from Touch Communications, Inc.

3Com adds SNA gateway, net mgmt. for OS/2 nets

3+Open now supports IBM's LU 6.2 protocol.

By Susan Breidenbach
West Coast Bureau Chief

WASHINGTON, D.C. — 3Com Corp. last week stepped up its effort to penetrate major accounts by announcing products that integrate local nets into IBM Systems Network Architecture sites.

The new products include a version of the Maxess SNA gateway that works with 3+Open, which is 3Com's implementation of LAN Manager. Network management software for the company's Maxess SNA gateways and a "cable tamer" to connect thin Ethernet to IBM coaxial cable were also announced.

With the new products, 3Com becomes one of the few LAN Manager suppliers that supports distributed applications written to Microsoft Corp.'s Named Pipes programming interface and IBM's LU 6.2 peer communications protocols. The company's 3+Open already supports Named Pipes; Maxess SNA gateway adds LU 6.2 support.

3Com was buoyed by an announcement from Baxter Healthcare Corp., a $7 billion supplier of medical products based in Deerfield, Ill. Baxter revealed that it will purchase more than $1 million worth of Maxess gateways over a one-year period.

> Baxter revealed that it will purchase more than $1 million worth of Maxess gateways.

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The products were unveiled at the Communication Networks Conference and Exposition '89 here, where 3Com also announced the imminent availability of two significant enhancements to its 3+Open LAN Manager: 3+Open Mail and 3+Open Internet.

The 3+Open Maxess gateway will compete against IBM's OS/2 Extended Edition Communications Manager, and the MaxView network management product is being offered as an alternative to IBM's NetView/PC.

3+Open Maxess 1.0, scheduled for release this summer, will support only DOS clients. A subsequent release, which 3Com hopes to issue by the end of the year, will also support workstations running OS/2.

SNA services offered by the gateway include 3270 terminal access, SNA directory services, Advanced Program-to-Program Communications/Personal Computer peer connectivity via LU 6.2, both token-ring and Synchronous Data Link Control connections to IBM hosts, and X.25 access to international networks.

Priced at $4,995, the product can be installed either in a client workstation or in 3Com's 3S/400 dedicated network server.

Another view

3Com's new MaxView software can give 3+ and 3+Open Maxess gateways enhanced network management capabilities.

Unlike IBM's NetView/PC, MaxView does not require a node to be used strictly as an entry point for network management data. The Maxess and MaxView products let an OS/2 server pass alerts to an IBM mainframe running NetView applications.

MaxView will be available in April and will cost $999.

3Com's new MultiConnect CableTamer provides impedance-matching between thin Ethernet and two types of thin coaxial cable used extensively in IBM 3270, Arcnet and Wang Laboratories, Inc. Wangnet sites.

Available in April, the MultiConnect CableTamer will be sold in packages of 10, with each package priced at $500.

3Com's electronic mail system for 3+Open networks will be available later this month, and 3+Open Internet, which routes data to OS/2 recipients, will be released in March. 3+Open Mail costs $1,190, and 3+Open Internet costs $1,500. ◘

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US Sprint plans delivery of switched 56K services

By Anita Taff
and Bob Wallace
Network World Staff

WASHINGTON, D.C. — US Sprint Communications Co. last week said it will begin offering in June its switched 56K bit/sec capability to companies with digital access to the network through its Virtual Private Network (VPN) service.

Also at the Communication Networks Conference and Exposition (ComNet) '89 here, US Sprint subsidiary Telenet Communications Corp. announced it is working with StrataCom, Inc. to link StrataCom's T-1 multiplexer with Telenet's TP4/III packet switch.

Switched 56

US Sprint's switched 56K bit/sec capability — dubbed VPN 56 — is currently being tested by three large customers ("US Sprint shows off switched 56," *NW,* Aug. 15, 1988). It lets users with digital access to its network transmit data at 56K bit/sec over WATS and other standard dial-up connections. The capability is comparable to switched 56K bit/sec services from other carriers but is roughly 75% less expensive, according to the company (see "MCI View, switched 56 services bow," page 1).

US Sprint's switched 56K bit/sec capability is currently being tested by three large customers.

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"Applications we are testing include videoconferencing, bulk file transfers, computer networking and Group IV [facsimile]," said Richard Smith, US Sprint national markets executive vice-president. He declined to name the users testing the service.

Also at ComNet, US Sprint announced that Contel Office Communications of St. Louis had signed a long-term contract, valued at $10 million, naming US Sprint as its primary long-haul provider. US Sprint will provide Ultra WATS service to more than 40 Contel Office Communications locations in 12 major metropolitan areas.

Telenet joins StrataCom

Telenet also announced it had signed an agreement to jointly develop an ISDN frame relay interface with Campbell, Calif.-based StrataCom.

The interface would allow StrataCom's Integrated Packet Exchange (IPX) T-1 multiplexer to route packets from Telenet's TP4/III switch to multiple destinations over a single line.

Without the interface, the IPX would not be able to handle routing so the Telenet processor would require a line to every destination device.

According to Telenet, the frame relay interface will allow users to reduce the number of lines and ports by about 40% in a corporate network consisting of four IPX nodes. Alan Taffel, vice-president of market development at Telenet, said the interface software will decrease network delay by 35% and increase the efficiency of backbone lines by 25%.

The interface software, which will reside on the Telenet TP4/III and the IPX, will support T-1 speeds. The IPX utilizes fast-packet technology, which allows statistical multiplexing of voice, data and video traffic. Unused bandwidth is reallocated to the network for other connections.

To support the new interface, Telenet plans to upgrade its TP4/III processor to support T-1 speeds by the end of 1989, Taffel said. Currently, the TP4/III supports speeds of only 256K bit/sec. The interface software is scheduled to be released during the first quarter of 1990, he said.

In a related agreement, Telenet announced it will immediately begin marketing the IPX multiplexer to corporate customers with T-1 networks.

Previously, Telenet purchased all of its network multiplexers from Timeplex, Inc., according to Taffel. ◪

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Trucker gets an edge with net

continued from page 1

devices designed by Thermo King Corp., a Minneapolis-based manufacturer of refrigerated vans. Attached to a truck's refrigeration unit, the device triggers alarms in the truck's cab and at TWX's data center here when temperature thresholds are exceeded.

The system played an important role in attracting business from large meat-packing customers and produce companies such as Sunkist Growers, Inc. and Dole Citrus, said Fred Ours, national accounts manager at TWX.

Tracker I is supported by a satellite-based tracking service from Geostar Corp. of Washington, D.C. TWX trucks are outfitted with transceivers that are polled each hour by Hewlett-Packard Co. HP 9000 minicomputers in Washington, said Jeff Amen, assistant to the president at TWX. The minicomputers collect information from each truck on the type of load it is carrying and its position.

The information is sent over dedicated circuits to TWX's data center here and stored in an IBM System/36 minicomputer. An attached IBM Personal Computer AT, running a software package from Techwest of Richmond, British Columbia, converts the data into a color map dotted with the positions of 50 trucks currently supported by the network, Amen said.

Impressive business tool

Techwest's logistical graphics software also runs on a Toshiba America, Inc. lap-top personal computer. TWX salespeople use the tool at customer sites, downloading data from Geostar or TWX's data center via a dial-up link to pinpoint the locations of a particular shipment — a technique that has proved to be a valuable sales tool, Amen said.

"It's very impressive to sit down in front of customers to show them where your fleet is and what it's doing," he said.

Truck positions are calculated to within one-sixteenth of a mile by Geostar using loran, a government-operated long-range navigation system, said Martin Rothblatt, president of Geostar. When a truck transmits an alarm, it is noted on the map display, alerting dispatchers to send help either from another truck in the area or from appropriate service personnel.

Drivers are equipped with a keyboard and a Hughes Network Systems, Inc. LCD display unit, which is attached to the truck's transceiver and used to communicate with headquarters if the driver has a problem on the road. The transceiver can emit an emergency signal that is recognized immediately, rather than at the usual polling time. Previously, drivers would have to find a pay phone or use a citizens band radio to get help.

The keyboards, combined with the tracking system, eliminate the need for drivers to stop twice a day to call headquarters and report their position, as is the norm at most trucking companies, Amen said. That feature alone saves drivers one to two hours per day, which translates into 50 to 100 miles, he said.

Drivers still have to call in at the origin and destination points of each load to receive instructions from dispatchers. However, TWX is about a month away from establishing two-way communications with drivers' on-board display units, which will obviate the need for those calls, Amen said. It will also allow the company to send last-minute cargo pick-up instructions and emergency messages to drivers.

Logging more miles

The satellite network monitoring system has allowed the 50 trucks to log 2,000 miles more each month than other TWX trucks, Amen said. Since TWX earns $1.08 in revenue for each mile traveled, it is not surprising that the company plans to equip another 100 trucks with transponders within two months.

The increased driver productivity also benefits the drivers themselves, since they are paid on a per-mile basis. In the past seven months, TWX's driver turnover has fallen from about 100% to 30%, Amen said. This is far below the industry average, which he estimated at 140% per year.

All those factors have contributed to the company's plans to add another 105 trucks to its fleet beginning in March. TWX plans to own 500 trucks within three years, Amen said.

#1

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*Datapro, *User Ratings of Network Management Systems*, September, 1988.

**International Data Corporation (IDC), *Quantitative Analysis of the Network Management Market*, October, 1988.

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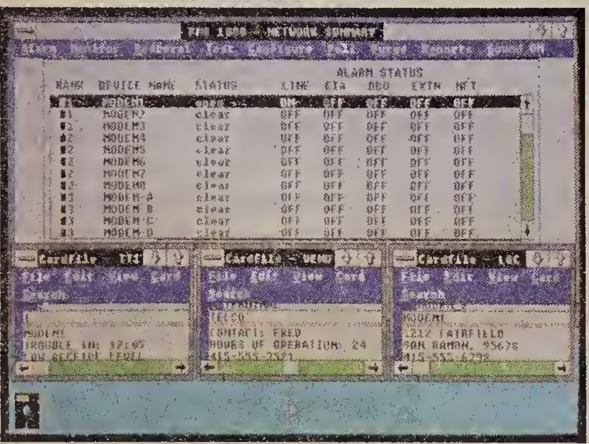

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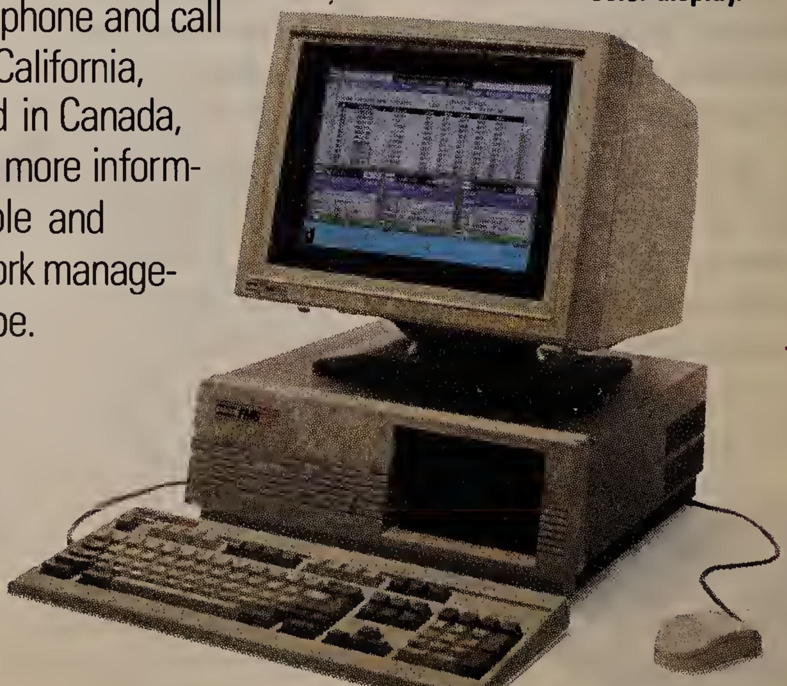

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

"Lately, in my sleep, I've had visions of X.25 and X.400. I'm not sure what that's supposed to mean. But it doesn't matter as long as my dreams fully support OSI."

Ellen Hancock
Vice-president and
general manager
IBM Communications Systems
During her keynote address
at Communication Networks '89

People & Positions

Technology Concepts Inc., the Sudbury, Mass., networking subsidiary of **Bell Atlantic Corp.**, named **Harry Ruda** to the post of vice-president of field operations.

Ruda will be responsible for sales and consulting operations. He replaces **Harry Schultz,** who previously held the position of vice-president of sales. Schultz has left the company. Most recently, Ruda was vice-president of integrated network sales at BBN Communications Corp.

Infonet promoted **John Hoffman** to the position of president of its Commercial Services division. He reports to company President Jose Collazo. Hoffman will be responsible for increasing sales of the company's worldwide messaging and data communications network service to multinational corporations.

Hoffman was formerly vice-president and general manager of Commercial Services, where he handled sales and marketing of all nongovernment business.

Plantronics, Inc.'s Network Access Group has announced the appointment of **Joseph Savage** to the position of vice-president of marketing. Savage will be responsible for new product planning and management.

Most recently, Savage was vice-president of product planning and engineering for Fujitsu America, Inc. ◼

Datacom service bureau signs on with Sears net

User praises wide reach of Sears network.

By Bob Brown
Senior Writer

GREENWICH, Conn. — "In some ways," said Bob Barham, president of Insurance Value-Added Network Services, Inc. (IVANS), "the Sears Communications Network is about as IBM blue as you can get."

IVANS, a service bureau that coordinates data communications between insurance companies and independent agents, began switching its leased-line IBM Systems Network Architecture traffic to the Sears net last September. Prior to signing on with Sears, IVANS used the IBM Information Network exclusively.

The Sears network's broad geographic coverage is the primary factor that attracted IVANS, said Barham, whose organization's members include about 51 property and casualty insurance firms and approximately 28 life insurance companies. The network's outposts are especially important for IVANS because many of its independent insurance agents are based in remote locations.

"There isn't much difference in pricing between the Sears and IBM networks, but there is a huge difference in cost," Barham said. "Because the Sears network is everywhere, we save on the cost of getting to the network."

The Sears network focuses primarily on carrying leased-line SNA traffic, Barham said.

IVANS has not been using the Sears network long enough to estimate the savings derived from the service cutover, Barham said.

Typically, independent agents use the Sears network for such purposes as sending data about a potential client to various insurance companies to determine which insurers are interested in underwriting the client.

IVANS is satisfied with running other traffic over the IBM Information Network, Barham said. The IBM network offers a much wider variety of options, including both asynchronous and Binary Synchronous Communications traffic, leased and switched lines, and protocol conversion. ◼

IVANS' Bob Barham

INDUSTRY BRIEFS

MCI Communications Corp. recently reported its best-ever quarterly and annual earnings and revenue thanks to new contracts with a number of large users and the success of several new services.

MCI reported earnings of $115 million for the fourth quarter ended Dec. 31, 1988, up fivefold from $23 million in earnings for the final quarter of 1987. Revenue grew to $1.43 billion for the fourth quarter of 1988, an increase of 38% over the $1.04 billion in revenue reported for the corresponding period the year before. MCI has reported record earnings and revenue for four straight quarters.

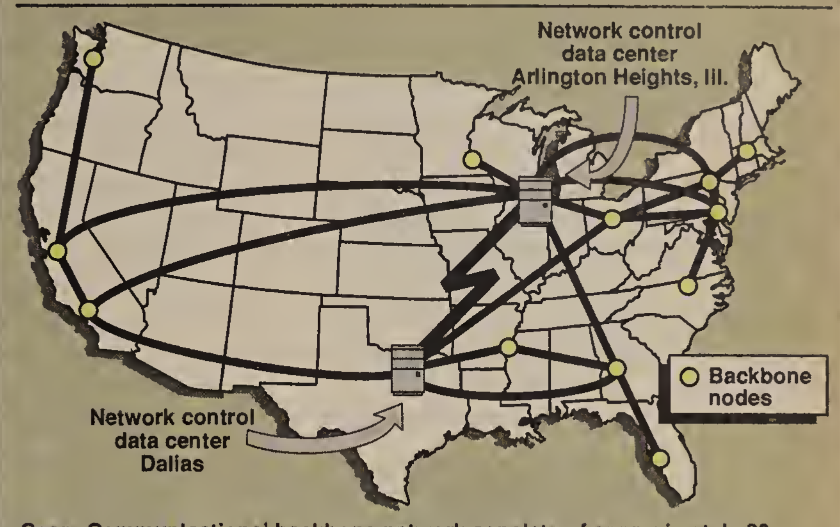
For the year, MCI reported earnings of $334 million, more than five times higher than the $64 million in earnings reported for 1987. MCI reported revenue of $5.14 billion for 1988, up 30% over the $3.94 billion in revenue earned the year before.

Bert Roberts, MCI president and chief operating officer, credited much of MCI's 1988 success to the carrier's introduction of worldwide direct dialing and further penetration of the 800 services market. Advanced 800 features, interactive 900 service and a full line of operator services are slated to be offered in 1989, he said.

"MCI is well-positioned for continued strong revenue and profit growth in 1989," Roberts said.

MCI has also profited recently from a number of contracts from large users, including Chrysler Corp. and Cray Research, Inc. ◼

Sears Communications' backbone network



Sears Communications' backbone network consists of approximately 80 T-1 links and serves Sears and external users.

SOURCE: SEARS COMMUNICATIONS CO., ARLINGTON HEIGHTS
GRAPHIC BY SUSAN J. CHAMPENY

Sears network unit widens its portfolio

Communications arm uses its wide geographic presence to expand services and attract users.

By Bob Brown
Senior Writer

ARLINGTON HEIGHTS, Ill. — Following a year in which Sears, Roebuck and Co. put its famed Sears Tower headquarters up for sale and saw its retail business sag, its Sears Communications Co. arm is aiming to pick up some of the corporate slack.

While Sears hasn't said it is looking to its communications business to offset sluggishness in traditional markets, the network division is hoping to give the corporation a boost by expanding its line of services and winning new customers.

Sears Communications specializes in providing IBM Systems Network Architecture data transport, usually for users that need to transmit data among multiple remote locations and an IBM host. The company also offers dial-up transmission service for users of 3270 devices.

Service is provided over the Sears Communications Network, which is marketed to external commercial users by Sears Communications and operated under the newly formed Sears Technology Services, Inc. The network provides communications services to both Sears' internal and external users.

Sears began offering network services to external users in 1986 to increase the return on investment of its internal communications network and staff, said Gary Weis, president of Sears Communications and senior vice-president of Sears Technology Services. But rather than simply selling excess net capacity, Sears treats its communications network as a separate business that it will expand to meet the needs of external users, Weis said.

Sears considers its major advantage over value-added network competitors such as IBM and Telenet Communications Corp. to be its wide geographic presence, Weis said.

Because the network was originally built for Sears' internal use, it spans everywhere that Sears and its subsidiaries have offices, Weis said. External users can link into the network via local nodes, which will be in about 90% of the local access and transport areas by the end of 1989, Weis said. Because users typically need only a relatively short access line to link to local nodes, Sears can keep its rates competitive, Weis said.

Sears Communications' low rates for carrying SNA traffic won over Insurance Value-Added Network Services, Inc. (IVANS), a service bureau in Greenwich, Conn. (see "Datacom service bureau gives its business to Sears," this page). Bob Barham, president of IVANS, said the company started using the network last September on a limited basis and has gradually added more users.

"The specific reason we considered the Sears net is because it is so much more geographically pervasive," Barham said. "The network is saving us money."

Barham said another attraction is that the Sears net focuses on one service, leased-line SNA data transport, and does it well.

However, Sears Communications will expand its service offerings this year, Weis said. "We're committed to continuing to evolve the network," he said. "We're not in it for the short run."

(continued on page 12)

Sears network unit widens its portfolio

continued from page 11

Earlier this month, the firm announced new electronic data interchange (EDI) offerings called EDI Services. These services, which will be available July 1, offer users paperless information exchange via computers. The services also let users communicate with other value-added networks. "We intend to be a major player in the EDI value-added services business," Weis said.

Sears also plans to offer a switched service later this year for asynchronous traffic, he said.

Because Sears has offshore locations, it is likely that international service will be available down the road, Weis said. Currently, Sears serves only U.S. users, although companies based in the U.S. can use the network for communications with their Canadian sites.

While Weis declined to say how many external users the company has, he said the network supports more than 135,000 terminals in 7,000 locations. That number includes Sears' internal users, he said.

Sears manages the network from its main data control center here, which employs about 300 data communications professionals. The company relies on IBM's NetView network management system and 586x and 786x diagnostic modems to control and monitor the network, Weis said. If users have a problem with the network, they are instructed to call Sears Communications, which will coordinate the servicing of the net, he said.

Weis said some users feel secure using the network because the retail giant itself relies on the same network facilities and engineers, Weis said.

Sears is targeting what it believes is a growing class of users that are tired of managing increasingly complex networks. The company targets its network services at users with SNA networks that have 20 or more remote sites needing to communicate with a central data processing site.

Sears supplies an IBM 586x or 786x modem for the user's remote site, from which data is transmitted over voice-grade circuits to a Sears node in the user's LATA. The node is linked by a T-1 or 56K bit/sec line to one of 18 major net nodes linked via multiple T-1 lines in Sears' backbone. Sears then works with the local Bell operating company to provide access lines from the user's data processing site.

Common mart may let U.S. get toehold abroad

By Bob Brown
Senior Writer

FRAMINGHAM, Mass. — The unification of the 12-country European Economic Community (EEC) by December 1992 will create opportunities and competition for U.S. data communications equipment and service vendors, according to a new report.

By creating a common market, the EEC is trying to form a single economic community for European businesses. This, it is hoped, will give these businesses the buying clout they need to purchase products in greater economies of scale.

Growing European businesses will require larger and more advanced networks, the report said.

U.S. communications equipment and service firms will have a chance to provide equipment to those users, according to the report by International Data Corp. (IDC), a research firm based here. However, as European businesses unite, they will provide solid competition for U.S. vendors attempting to win communications equipment contracts overseas, the report said.

Challenges facing U.S. vendors in Europe

- Overcoming existing national brand loyalties
- Establishing a customer service organization capable of meeting local and pan-European client needs
- Establishing a sales organization that can meet specific country and multinational client needs
- Learning how to market and advertise to pan-European companies and country-specific areas

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

"Any company underestimating the power of the EEC is overlooking the single most significant transition in European business since World War II," said Kathryn Korostoff, a senior analyst for IDC's Communication Industry Research Service.

European firms figure to become even stronger through a spate of recent strategic acquisitions, mergers and joint ventures, including Ing. C. Olivetti & Co., S.p.A.'s acquisition of 51% of Lee Data Corp. of Minneapolis, Korostoff said.

U.S. firms face a number of challenges abroad, the report said. They must overcome existing national brand loyalties; establish quality customer service organizations capable of meeting local and pan-European client needs; set up a sales force that can meet specific country and multinational client needs; and market and advertise to pan-European companies and country-specific areas.

Existing data communications service networks, provided by U.S. firms such as IBM, GE Information Services and Infonet, have an advantage over European newcomers, which must seek to differentiate themselves, the report said.

The IDC report is entitled *Europe 1992; Strategic Issues for U.S. Data Communications Suppliers*. For more information, call IDC at (508) 872-8200, ext. 368.

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Worth Noting

Northern Telecom, Inc. recently said it has three million lines of Meridian Digital Centrex shipped or on order. The switch maker introduced the central office-based service in 1982.

Carrier Watch

SouthernNet USA last week announced price cuts on six of its WATS and 800 services, including its premier 1+ direct-dial product, FirstWATS, which was chopped an average of 8.3%, effective immediately. Rates were also reduced an average of 1% to 4% for First Choice (formerly Basic Long Distance Service), BusinessWATS, InteleWATS, CorporateWATS, 800 Anyline and Business 800.

SouthernNet also announced its new Corporate LATA Termination Service, which offers large customers discounts of 10% to 20% compared to competitors' WATS products for calls to major cities. The service requires T-1 access from the user's premises and 1,200 hours of long-distance usage per month.

ITT Communications Services Group announced an average 3.7% price cut for its Custom Call 100 interstate long-distance service, effective March 1. The price cut, which is subject to Federal Communications Commission approval, applies to all rate periods and to calls placed with ITT's Preferred Calling card.

ACC Corp. last week announced its merger negotiations with **Rochester Telephone Corp.** have ceased due to unacceptable new demands introduced by Rochester Telephone. This news followed a similar announcement in December, but ACC Chairman of the Board and Chief Executive Officer Richard Aab said last week, "All discussions . . . have halted and there is no reason to believe they will resume." ◼

Bell companies report rise in demand for CO services

Two firms also detail net modernization efforts.

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — Southern Bell Telephone and Telegraph Co. and Bell Atlantic Corp. last week revealed a surge in demand for their central office-based services.

The two companies made the announcements at the Communication Networks Conference & Exposition '89 here. They also talked briefly about their network modernization efforts.

Southern Bell, which reported revenue of $6.8 billion last year, spent $1.74 billion on network construction in 1988. As a result, almost 98% of the Bell operating company's interoffice trunks are now digital.

Southern Bell sold 465,000 local access lines last year, increasing its installed base by about 5%, to 9.2 million lines, according to Richard Moran, new services operations manager for BellSouth Corp., the local carrier's parent company.

Southern Bell's installed Centrex base reached 402,500 lines in 1988. Roughly 231,600 of those lines are analog and 170,900 are digital. Moran predicted Southern Bell will expand this base to 163,100 analog and 461,500 digital lines by 1993.

In 1988, Bell Atlantic's installed Centrex base grew 7.3% overall, bringing the total number of lines in use to 1.57 million. Growth in Centrex lines serving its small and midsize business customers (100 lines or fewer) was more than 24%, while the increase in the mid-range market (101 to 400 lines) was about 11%. Growth of Centrex lines serving large customers (401 lines or more) was 3.7%.

Bell Atlantic's network contained a total of 297,000 route miles at the end of 1988 and will grow by 72,000 route miles a year for the next several years, according to Greg Lakin, Bell Atlantic's Centrex and Integrated Services Digital Network managing director.

Lakin said the number of nodes for Bell Atlantic's LANgate central office-based local network service grew 52% in 1988, bringing the total number in use to more than 20,000.

In its ongoing preparations for ISDN, Bell Atlantic has equipped 34 tandem switches, 337 central offices and 9.1 million lines — 54% of all its lines — to support CCITT Signaling System 7. ◼

WASHINGTON UPDATE

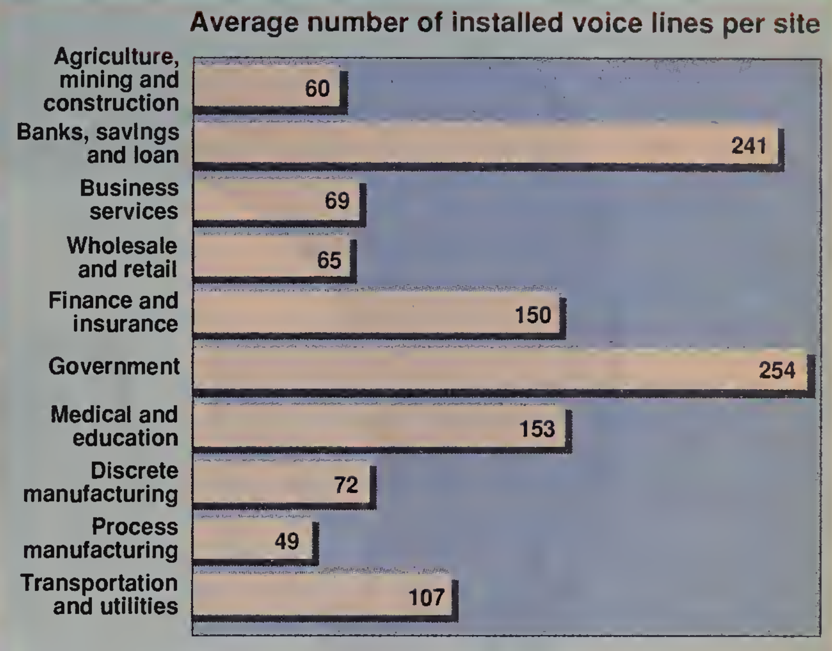
BY ANITA TAFF

Let's keep this our little secret. AT&T last week continued its efforts to keep secret the rates it will charge for services provided under the Federal Telecommunications System (FTS) 2000 contract. In a letter sent to Gerald Brock, chief of the Federal Communications Commission's Common Carrier Bureau, AT&T countered claims made in a letter sent to Brock by MCI Communications Corp. late last month.

In that letter, MCI criticized AT&T's request and accused the company of trying to deregulate itself through the tariff process. MCI also asked the FCC to find AT&T's FTS 2000 tariff unacceptable for filing because it failed to include rates.

Douglas Dunn, AT&T's corporate vice-president of the federal regulation department, called MCI's claims "meritless" and said MCI is attempting to obstruct the tariff review process. He said the FTS 2000 tariff included rates for FCC review, but a copy without rates was made available for public review.

US Sprint questions tariff. AT&T last week also defended a tariff filed last month that, for a limited time, would allow the company to waive onetime installation and ordering charges for new customers of its Software-Defined Network (SDN) service. US Sprint Communications Co. opposed the tariff, saying AT&T failed to provide enough information on how the promotion would affect SDN revenue or other AT&T services. AT&T characterized US Sprint's objections as unfounded, saying that the FCC reviewed AT&T's economic support data and found it adequate to grant the carrier permission to implement the tariff 14 days after filing. ◼


Voice access line usage trends

Figures are based on a January 1989 survey of 35,000 sites.

GRAPHIC BY SUSAN J. CHAMPENY   SOURCE: COMPUTER INTELLIGENCE, LA JOLLA, CALIF.

Satellites won't fade away, report finds

COMSAT study predicts users will continue to count on satellites, fiber for int'l telecom needs.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — Users will continue to rely on both satellites and fiber-optic cables for international telecommunications well into the next century, according to a study released last week by Communications Satellite Corp.

The study, released at the Communication Networks Conference and Exposition '89 here, concludes that satellite-based and fiber-based services will be priced competitively in the future, and it predicts that services using some types of satellite will be as much as 45% less expensive than international services over fiber.

Customers will also continue to use satellites for international service because of their ability to support multipoint transmissions and to reach remote areas, as well as their high reliability, the study concluded.

With the advent of transoceanic fiber cables, many industry analysts have questioned the long-term viability of satellites. Current fiber cables offer very high-bandwidth capacities, yielding a relatively low fixed cost per circuit. Technological advances that reduce the need for repeaters will further drive down prices for fiber-based services.

Analysts point out that satellites have a limited life expectancy, and, although new technology is increasing this lifespan, satellite costs tend to fluctuate over time as new units are built and launched. Also, unlike fiber cables, satellites have an inherent transmission delay, which is often perceived as disruptive for voice traffic and interactive data applications.

Given these concerns, COMSAT, the U.S. representative in the International Telecommunications Satellite Organization, commissioned the study to evaluate the future of satellite technology. The study examined the expected role of satellites in the years 1995 to 2005.

The study compared five types of satellites — ranging from sophisticated devices with multiple, steerable beams to lower power satellites with fixed beams — and advanced fiber cable. In order to give a realistic picture of the future, the study considered only current technology. It projected traffic to grow according to historical trends, and included development and insurance costs for satellites; however, some costs associated with fiber cables, such as service restoration, were not included.

The fiber was projected to have four times the capacity of TAT-9 but would cost the same as that transatlantic cable, which is slated for completion in 1991.

When comparing costs of fiber with satellite costs, the study found that transmitting voice, data and video services via Ku-band satellites with steerable multiple beams was 27% less costly and service via C-band fixed-beam satellites was 45% less costly than fiber. ◼

How UDS squeezes more out of the V.32 standard

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Every UDS V.32 is fully compliant with the CCITT recommendation, but that's only the beginning. Model V.3225, the latest in the UDS V.32 family, offers *lots* of extra features.

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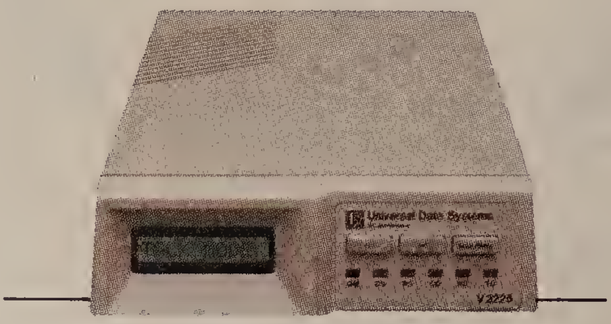

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Worth Noting

"Surely, Virtual Terminal is not going to be a little backwater standard that nobody cares about, but neither is it going to have a major impact like X.400."

David Chappell
Independent consultant
and chairman
Upper Layers
Special Interest Group
National Institute of
Standards and Technology
Gaithersburg, Md.

Data Packets

Spectrum Concepts, Inc. recently added support for IBM's Application System/400 (AS/400) and System/36 minicomputer lines to its XCOM 6.2 software.

The new XCOM 6.2 is compatible with earlier versions for IBM MVS mainframes, System/38s, personal computers, Digital Equipment Corp. VAXes, AT&T 3B2 minicomputers and workstations from Apollo Computer, Inc. and Sun Microsystems, Inc.

XCOM 6.2 uses IBM's LU 6.2/Advanced Program-to-Program Communications protocol, which allows for unattended bidirectional file transfer and job sharing, the company said. The software eliminates the need for AS/400 and System/36 remote job entry terminal emulation.

Spectrum Concepts said XCOM 6.2 is the only available software that permits System/36 and AS/400 minicomputers to initiate transfers to personal computers.

Available now, XCOM 6.2 ranges from $500 to $3,000 for the System/36 and from $1,800 to $12,000 for the AS/400, depending on configuration. Software to support other systems ranges from $475 for IBM Personal Computers to more than $30,000 for mainframes.

For more information, contact Spectrum Concepts at 150 Broadway, New York, N.Y. 10038, or call (212) 766-4400.

T-1 mux vendors prepare wares for advent of ISDN

Several say PRI cards will debut in six months.

By Wayne Eckerson
Staff Writer

T-1 multiplexer vendors are readying ISDN-compatible multiplexers in anticipation of strong demand later this year by private network users.

A handful of vendors plan to introduce multiplexers equipped with Integrated Services Digital Network Primary Rate Interface adapter cards within six months, while others said their products will roll out by mid-1990.

"All of the major T-1 multiplexer manufacturers are developing ISDN interfaces," said Gerry Dooley, vice-president of technology for Digital Communications Associates, Inc. (DCA), based in Norcross, Ga. "There is no demand now, but a year from now, it will be a feature you will need to have."

ISDN multiplexers will enable network planners to supplement their private networks with switched bandwidth on demand through ISDN.

Switched ISDN services could be used to back up existing dedicated lines. This would enable network managers to eliminate redundant backup T-1 lines that are costly to support. Access to ISDN might also let companies provide digital links to small branch offices that do not warrant a full dedicated line.

In addition, ISDN multiplexers would allow network planners to engineer networks that have lower overall bandwidth requirements. For instance, during peak periods of traffic, network managers can divert overflow traffic from dedicated lines to switched ISDN services. Without ISDN access, private networks need to be designed with more T-1 lines to ensure the network has enough capacity to handle traffic during peak periods.

Consultants, however, are skeptical about the value of ISDN-compatible multiplexers to large private network users.

"Vendors are looking to develop ties to ISDN not necessarily

(continued on page 16)

Encryption unveiled for CompuServe's public net

By John Cox
Senior Editor

COLUMBUS, Ohio — CompuServe, Inc. recently unwrapped encryption products for its public packet data network.

The new devices, announced by CompuServe and Cryptall, L.P., a builder of encryption products, enable public network users to protect their data from unauthorized access.

The capabilities also let users shift data from expensive leased lines to cost-effective dial-up public circuits while ensuring access control and privacy, said John Rue, manager of network services marketing for CompuServe, based here.

End users will buy or lease Cryptall's DPU-1000X or Secure Network Management Systems (SNMS) encryption products. CompuServe is currently negotiating to market Cryptall's products. The products are not part of CompuServe's public network but instead reside at a customer site and scramble data before it is broadcast over the public net.

The DPU-1000X, for instance, is a stand-alone encryption unit that attaches to a terminal or personal computer. It comes with data compression, a Hayes Microcomputer Products, Inc.-compatible modem and Microcom, Inc.'s Microcom Network Protocol error-correcting protocol support.

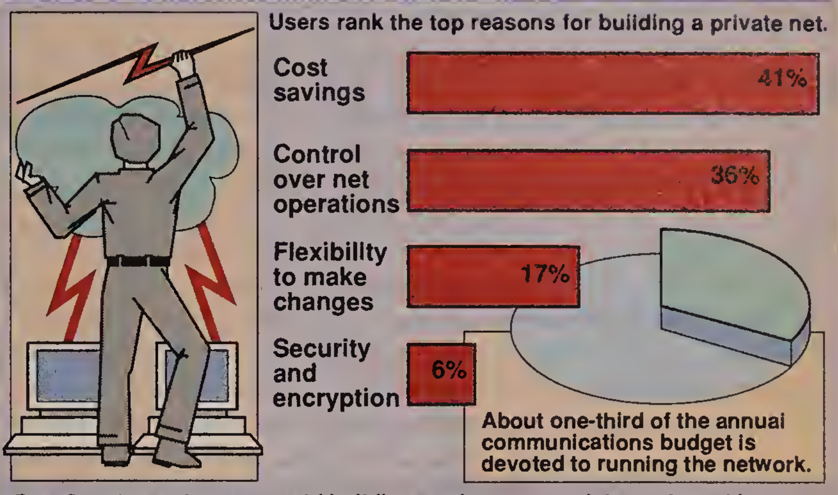
CompuServe users can also buy Cryptall's SNMS, an IBM Personal Computer AT-bus processor that maintains a data base about use of the encrypted data to create an audit trail.

SNMS, which supports as many as 10,000 remote users, performs a line-by-line evaluation of the equipment operating conditions, according to Matthias Lukens Jr., vice-president of sales and marketing for Cryptall, which is based in Cranston, R.I.

CompuServe expects the encryption products to appeal to financial services companies, Rue said. Banks offering services such as cash management are letting outside users into corporate accounts, he noted. Such access is usually provided via an expensive leased line. Now, such services can be offered over the less expensive dial-up public net, he said.

Cryptall's DPU-1000X costs $1,495. The SNMS network management package costs $8,100 and includes a controller card and software that fits into an IBM Personal Computer AT.

Why build a private network?



By a 2-to-1 margin, users said building a private network is motivated by a desire to cut current rather than future costs. The survey found that users expect an average yearly savings of $370,000 with a private net.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: TFS, INC., WESTFORD, MASS.

VT will garner use slowly, analysts say

Although terminal standard is nearly finished, wide-scale implementation is not expected soon.

By Paul Desmond
Staff Writer

GENEVA — The International Standards Organization (ISO) is expected to publish the final version of its Basic Class Virtual Terminal (VT) standard here soon, but analysts expect it will be at least a year before VT begins replacing existing terminal protocols in users' networks.

VT outfits terminals and personal computers with a common user interface and offers a standardized method for communicating across networks of multivendor host computers, a welcome capability in many heterogeneous networks.

While praising the ISO's intent, analysts downplayed the initial impact of the new standard and said vendors have at least a year's worth of work ahead of them before the standard can be widely implemented.

In Open Systems Interconnection-based networks, VT promises to obviate the array of terminal emulation packages now needed to forge links between terminals or personal computers, and hosts.

"You will now have an international standard for doing a lot of things that were done almost on an ad hoc basis — widely popular, perhaps, but an ad hoc basis," said Paul Bartoli, chairman of Subcommittee 21 of the ISO/International Electrotechnical Committee Joint Technical Committee 1, which drafted the proposed standard.

VT is expected to have its most immediate impact on government agencies that are required to comply with the Government OSI Procurement (GOSIP) specification by next year. Subcommittee 21 has completed its work in hammering out the VT specification, Bartoli said. All that remains now is to clear the publishing process at the ISO, based here. The VT standard is scheduled to be published this month, but that date is contingent upon the ISO's publishing backlog, he said.

Compared to Telnet

The new standard is an OSI application-layer protocol that analysts and vendors compare to Telnet, the remote logon protocol used in Transmission Control Protocol/Internet Protocol networks. Both allow a terminal or workstation attached to a local host to log on to a remote host from a different vendor.

But Telnet was designed to support simple line-by-line applications associated with teletypewriter-compatible devices. "OSI VT, at the cost of somewhat increased complexity, is intended to allow significantly greater functionality [than Telnet]," said David Chappell, an independent consultant and chairman of the Upper Layers Special Interest Group at the National Institute of Standards and Technology.

VT can be adapted to support 3270-type functions such as forms mode, whereby a user can move the cursor to fill in specific areas on a screen as the application requires, Chappell said.

Before VT has any impact, there are problems with the standard that vendors and users must overcome, analysts said.

First, VT will require vendors to overhaul existing application

(continued on page 16)

VT will garner use slowly, analysts say

continued from page 15

program interfaces (API), said Dale Kutnick, an independent consultant in Redding, Conn. APIs define the formats in which data is presented to the application from the terminal communicating with it, he said.

Implementation of the VT specification redefines existing API formats, requiring vendors to write new APIs for each application, a process that may take up to two years, he said.

Since VT is an application-layer protocol, residing at the top of the seven-layer OSI protocol stack, it requires the support of the six layers beneath it, Chappell said. Few users are prepared to support those layers, although that may change when the new version of Berkeley Unix is released some time this year, he said.

Unix 4.4 Berkeley Software Distribution will include the full seven-layer OSI model, as well as several applications, including VT. ("New Unix version to incite user and vendor acceptance of OSI," *NW*, Dec. 19, 1988). The new Unix version could spur interest in OSI the way an earlier version, Berkeley Unix 4.2, sparked commercial interest in TCP/IP, Chappell said.

Another stumbling block for VT is the development of terminal profiles that the protocol will support. Profiles define certain types of terminals — such as teletypewriter- or forms-compatible — rather than specific brands, although the two overlap to some degree.

Profiles are required because VT by itself provides only a generic representation, or least common denominator, of terminal screen formats and the ways terminals communicate with hosts, Kutnick said.

Despite the problems, 3Com Corp. has already released a VT application that conforms to the draft versions of VT and will be upgraded to comply with the final standard, said Cindy Jung, manager of OSI technology at 3Com.

Another vendor, Retix, will have a portable VT software product out in the second quarter, which it will sell to OEMs, said John Stephensen, senior vice-president of technology and marketing for Retix. A VT implementation compatible with DOS and Unix System V is expected to be available in the fourth quarter, he said. ◼

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T-1 mux vendors prep wares for ISDN

continued from page 15

because there is demand for it, but because ISDN sells," said David Passmore, an analyst at Network Strategies, a research firm in Fairfax, Va.

Even when ISDN multiplexers become universally available, they will not provide an adequate substitution for private T-1 networks, according to Tim Zerbiec, a principal and vice-president at Vertical Systems Group, a research firm in Dedham, Mass. The number of U.S. companies with T-1 nets will increase from 50% to 75% between this year and 1992, he said.

Instead of ISDN, most customer demand will be for a carrier service called Central Office Based Intelligence Transport (COBIT), Zerbiec said. COBIT will provide end users with a dedicated backbone network that is installed, maintained and run by the carrier. Essentially, COBIT provides an end user with all the functionality of a private network without the hassle.

"COBIT will provide users with digital networks they can control long before ISDN rolls out," Zerbiec said.

Jumping on the bandwagon

Nevertheless, vendors seem convinced that ISDN is the wave of the future. Just last month, General DataComm, Inc. said it is teaming up with Hitachi, Ltd. to develop an ISDN interface for its Megamux line of multiplexers ("GDC, Hitachi join forces to develop ISDN T-1 mux," *NW*, Jan. 16). General DataComm said the product will be released later this year.

Likewise, DCA plans to announce an ISDN interface for its T-1 multiplexers in about six months, Dooley said.

Thomas Taylor, president of Avanti Communications Corp., a multiplexer vendor in Newport, R.I., said he expects customer demand for ISDN features to grow to significant levels by the third or fourth quarter of this year. "ISDN is definitely going to be a technology that plays a big role," he said.

Other companies, such as Network Equipment Technologies, Inc. (NET), are not moving as quickly. NET does not expect carriers to provide ISDN services over a wide geographic area until 12 to 18 months from now, said Kurt Jaggers, a marketing manager at NET in Redwood City, Calif. NET will offer ISDN-compatible products when the market is ready for them, he added.

Trials and tribulations

Michael Zboray, a senior manager for network planning at Timeplex, Inc., said the process is much more difficult than most vendors realize.

"Vendors may say it is easy to develop an ISDN interface card, but most haven't tried," he said.

Timeplex has been testing prototypes of Primary Rate Interface cards for its line of Link multiplexers since 1987, according to Zboray. It is the only company interviewed by *Network World* that has conducted trials of a Primary Rate Interface for a multiplexer line.

The biggest difficulty Timeplex encountered in the trials was implementing the Primary Rate Interface on different vendors' switches. Not all companies implement the Primary Rate Interface on their switches in exactly the same way. For example, an interface card built for AT&T's 4ESS switch will not work with Northern Telecom, Inc.'s DMS 250 switch. ◼

LOCAL NETWORKING

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Worth Noting

> "No one is likely to feel the brunt of IBM's 16M bit/sec Token-Ring more than 3Com Corp., the premier Ethernet supplier. 3Com will have a particularly hard time selling to large corporations where IBM rules the roost."

George Elgar
President
MicroClear Corp.
A New York consultancy

Netnotes

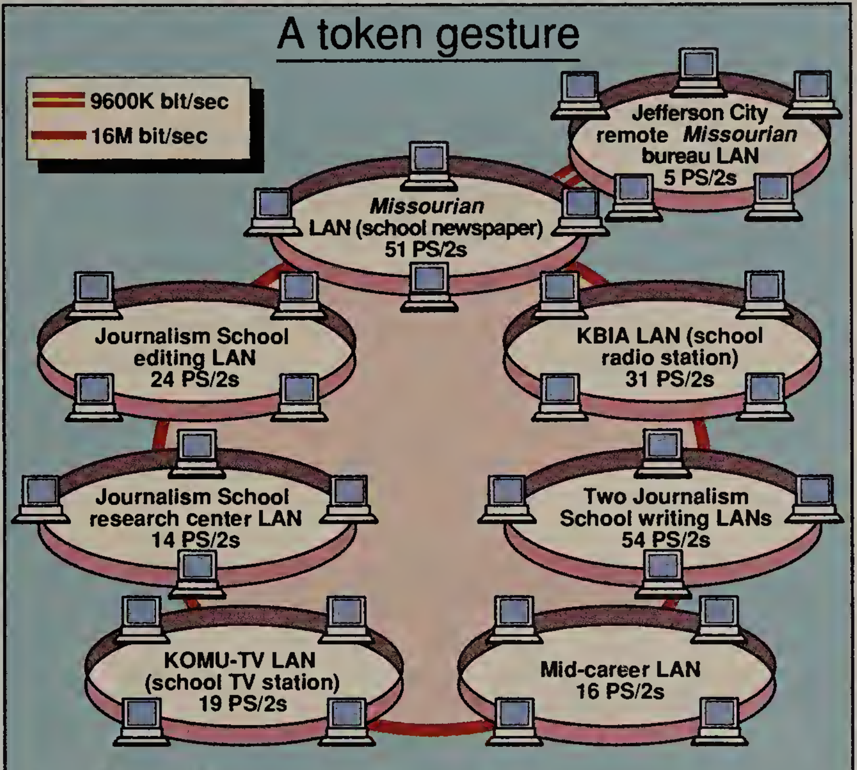
Excelan, Inc. last week introduced **Digital Equipment Corp.** VMS and **Sun Microsystems, Inc.** SunOS versions of network management software for its EXport 2000 communications server.

The new VMS and SunOS EXport 2000 net management software runs on a VAX minicomputer or Sun workstation. It provides all network management functions. A portion of the net management software is downloaded from the host to the EXport 2000, according to Excelan Product Manager Rick Bohdanowicz.

The current version of the EXport 2000 network management software runs only on MS-DOS-based microcomputers. The new VMS and SunOS versions, combined with the existing MS-DOS version, mean that Excelan's EXport 2000 can now provide network management on three of the most widely used personal computer and workstation environments.

Excelan said it will give users the network management software free when they purchase two or more EXport 2000 servers, which are priced at $2,795 each.

The SunOS and VMS software each cost $1,995. The VMS and SunOS EXport 2000 network management software is available now. For more information, contact Excelan at 2180 Fortune Drive, San Jose, Calif. 95131; (408) 434-2300.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9600K bit/sec
16M bit/sec
Jefferson City remote *Missourian* bureau LAN 5 PS/2s
Missourian LAN (school newspaper) 51 PS/2s
Journalism School editing LAN 24 PS/2s
KBIA LAN (school radio station) 31 PS/2s
Journalism School research center LAN 14 PS/2s
Two Journalism School writing LANs 54 PS/2s
KOMU-TV LAN (school TV station) 19 PS/2s
Mid-career LAN 16 PS/2s

PS/2 = Personal System/2

The University of Missouri School of Journalism is installing a series of IBM Token-Ring Networks that integrate various departments.

SOURCE: UNIVERSITY OF MISSOURI SCHOOL OF JOURNALISM, COLUMBIA, MO.
GRAPHIC BY SUSAN J. CHAMPENEY

Token-Ring nets centralize U. of Missouri data bases

Local nets integrate journalism school operations.

By Laura DiDio
Senior Editor

COLUMBIA, Mo. — The University of Missouri's School of Journalism is installing a series of 16M bit/sec IBM Token-Ring Networks that could take some of the old-fashioned legwork out of reporting.

The university and IBM are building and installing a series of 10 interconnected fiber-optic 16M bit/sec IBM Token-Ring Networks as part of a $2 million joint research project. The local nets will integrate all of the journalism school's computer operations, enabling reporters and editors to access a wide variety of data bases from anywhere across the network.

In return for donating the Token-Ring equipment, IBM will be licensed to use and sell all of the vertical data base applications the journalism school develops, said Robert MacGregor, program manager, special projects in IBM's newly formed University and College Systems group.

These data bases — including a Freedom of Information Act file and an extensive list of sources — are being developed especially for the research project, said Phil Brooks, associate professor of journalism and applications programmer on the network research project.

"The types of stories reporters cover today have grown a lot more complex since the days of the movie *The Front Page*," Brooks said. "Ingenuity and imagination are irreplaceable. But our 16M bit/sec Token-Ring Networks, with their sophisticated data base capabilities, will make the [Personal System/2s] virtual one-stop desktop source books."

The journalism school is planning to network more than 200 IBM Personal System/2s running OS/2 Extended Edition. The Personal System/2s offer word-processing graphics and editing capabilities. They essentially act as information gateways with the power to tap internal data bases and probe public resources for information.

Subnet culture

The journalism school plans to design and install all 10 Token-Rings by next spring. The nets will be connected with 16M bit/sec IBM Token-Ring adapter boards and will transmit data over fiber-optic cabling.

The project's backbone will be a net management and information services Token-Ring local net, which will perform daily file backups for the nine sub-Token-Ring local nets. It will provide the other Token-Ring subnetworks with net management functions and information on available services, Brooks said.

The nine sub-Token-Ring nets will be connected to the network management backbone net by 16M bit/sec Token-Ring bridges. The backbone Token-Ring will use IBM's NetView net management software in tandem with a little-known IBM diagnostics package called IBM's OS/2 LAN Manager v2.0.

The product, which is not related to Microsoft Corp.'s OS/2

(continued on page 18)

Users slow to jump at data base servers

As Microsoft preps its long-awaited SQL server, skeptical users plan to sit out initial product push.

By Susan Breidenbach
West Coast Bureau Chief

SAN FRANCISCO — Even though the market for data base servers should heat up next month with the release of Microsoft Corp.'s long-awaited SQL Server, users are taking a wait-and-see attitude toward the emerging local net technology.

"We will try something fairly early on, but I don't think I want us to be first," said Cheryl Currid, manager of applied information technologies at Coca-Cola Co. Foods Division in Houston.

SQL Server and other data base network servers based on a client/server architecture represent a new technology that does away with traditional data base requests on a local network.

Older data base systems typically route files or entire data bases over the network for processing at a local workstation. This can slow response time as hefty data files chew up network bandwidth.

However, the emerging SQL-based data base servers let users route processing requests to the local net's data base server. The server processes the data base query and ships only the resulting answers, not the whole file or data base.

As products conforming to the new client/server architecture are rolled out in 1989, vendors will jockey for market position, while users are likely to sit out the initial product push, said Bill Higgs, vice-president of software research for InfoCorp, a San Jose, Calif., market research company.

In the battle for market share, some products are bound to fall by the wayside, Higgs said. To minimize the risk of choosing one of these, he added, users should consider two factors: how a vendor implements the SQL technology and whether it is part of a family of scalable servers that provide an upgrade path.

When users get around to buying the technology, they will have a pool of products from which to choose. While attention has been focused on the SQL Server that was jointly developed by Microsoft, Ashton-Tate Corp. and Sy-

(continued on page 18)

LANMARKS

BY DAN SATROM

Fiber's emergence raises need for standard

In the past two years, fiber optics has emerged as one of the major cabling schemes in the local net market, a role that will be solidified and expanded in the 1990s.

The technology of fiber optics is advancing rapidly. So too is the need to establish a standard. Without a standard, end users will be at the mercy of a ubiquitous high-pressure marketing campaign led by an array of fiber-optic vendors, each providing their own proprietary solution. These solutions may or may not be interoperable with other vendors' products.

In the short term, users can expect fiber to be among the growing number of medium types that support 10M bit/sec Ethernet. Currently, these types include the established baseband and broadband coaxial cable as well as the unshielded twisted-pair standard now under development.

Last November, the IEEE 802 standards committee, which is responsible for developing a standard for the physical and media access control layers of the Open Systems Interconnection model, held its annual plenary meeting in Phoenix. The committee decided it would begin work on drafting a standard for a fiber-optic network extension to its carrier-sense multiple access with collision detection Ethernet family of local net standards.

The establishment of a fiber-optic Ethernet standard, coupled

(continued on page 18)

Satrom is vice-president of marketing for BICC Data Networks, Inc. in Westborough, Mass.

Fiber's emergence raises standard need

continued from page 17

with the subsequent addition of fiber to this list, will confirm Ethernet's position as the local net best specified to take advantage of recently developed structured wiring systems. Such a standard further ensures users that Ethernet will continue to have the most widely served product base.

By sanctioning this work on a fiber network standard, the committee confirmed its continued support for the Fiber Optic Inter-Repeater Link (FOIRL) as the first fiber 802.3 local net standard.

The IEEE 802.3 working group has declared that the Active Star version of the new CSMA/CD fiber network standard will be compatible with FOIRL. This ensures that equipment that complies with existing standards will have upgrade capability and compatibility. This equipment will also continue to be supported by the new standard.

This support protects users' past, present and future structured wiring investments. FOIRL-compliant products installed today in conjunction with 62.5-micron fiber ensures users an easy growth path when the new standards are set and products are developed in the 1990s. (The 62.5-micron fiber will probably be the choice of the IEEE 802.3 committee and the International Standards Organization's Fiber Distributed Data Interface committee.)

The standardization of fiber nets for CSMA/CD has a checkered past. It has been beset by arguments among proponents of active- or passive-based systems.

Both sides agree on a star topology. However, in the passive approach, the star mode splits the incoming signal to each of its output parts in a passive "light splitter." Conversely, in the active approach, the signal is split electrically through an active piece of electronics.

The advantages and disadvantages of both techniques vary and depend on the individual application. However, one of the long-standing imperfections in the passive approach has been its inability to devise a collision detection technique that can perform according to the requirements of the standards committee.

Last March, the 802.3 study group finally determined that the passive and active techniques both merited consideration to be proposed as standards.

Users slow to jump at data base servers

continued from page 17

base, Inc., other contenders in the data base server market include Oracle Corp.'s Oracle; IBM's OS/2 Extended Edition Data Manager subsystem and assorted host-based relational data base management systems; Novell, Inc.'s NetWare SQL; and GUPTA Technologies, Inc.'s SQLBase.

The client/server model

All of those popular data base programs have been positioned as data base front ends to one or more of the back-end data base servers. Under the new client/server model, a front-end application running on a personal computer or a workstation makes an SQL request to the data base server, which processes the request. Only the request and its result, rather than entire unprocessed blocks of data, travel across the network.

Coca-Cola, for instance, is one of the largest users of Microrim, Inc.'s R:Base, which is being turned into a front end for the SQL Server and IBM's OS/2 Extended Edition Data Manager.

Borland International, Inc. is building the necessary links among its Paradox, Microsoft's SQL Server and IBM's OS/2 Extended Edition Data Manager. Borland International is also hedging its bets further by supporting Novell's NetWare SQL and Oracle. Lotus Development Corp., on the other hand, is partnering with GUPTA Technolgies for its GUPTA SQLBase as a back end for Lotus applications.

The result for users is that front-end data base systems paired with back-end data base servers will provide a distributed data base setup that will rival host-based systems in performance but sport more flexible processing technology.

"I'm waiting to see if I'll be able to put together a 100,000-record application without tapping the mainframe," Currid said. If she can, it will represent a quantum leap in the computing capabilities of microcomputer-based local networks.

Token-Ring nets centralize data bases

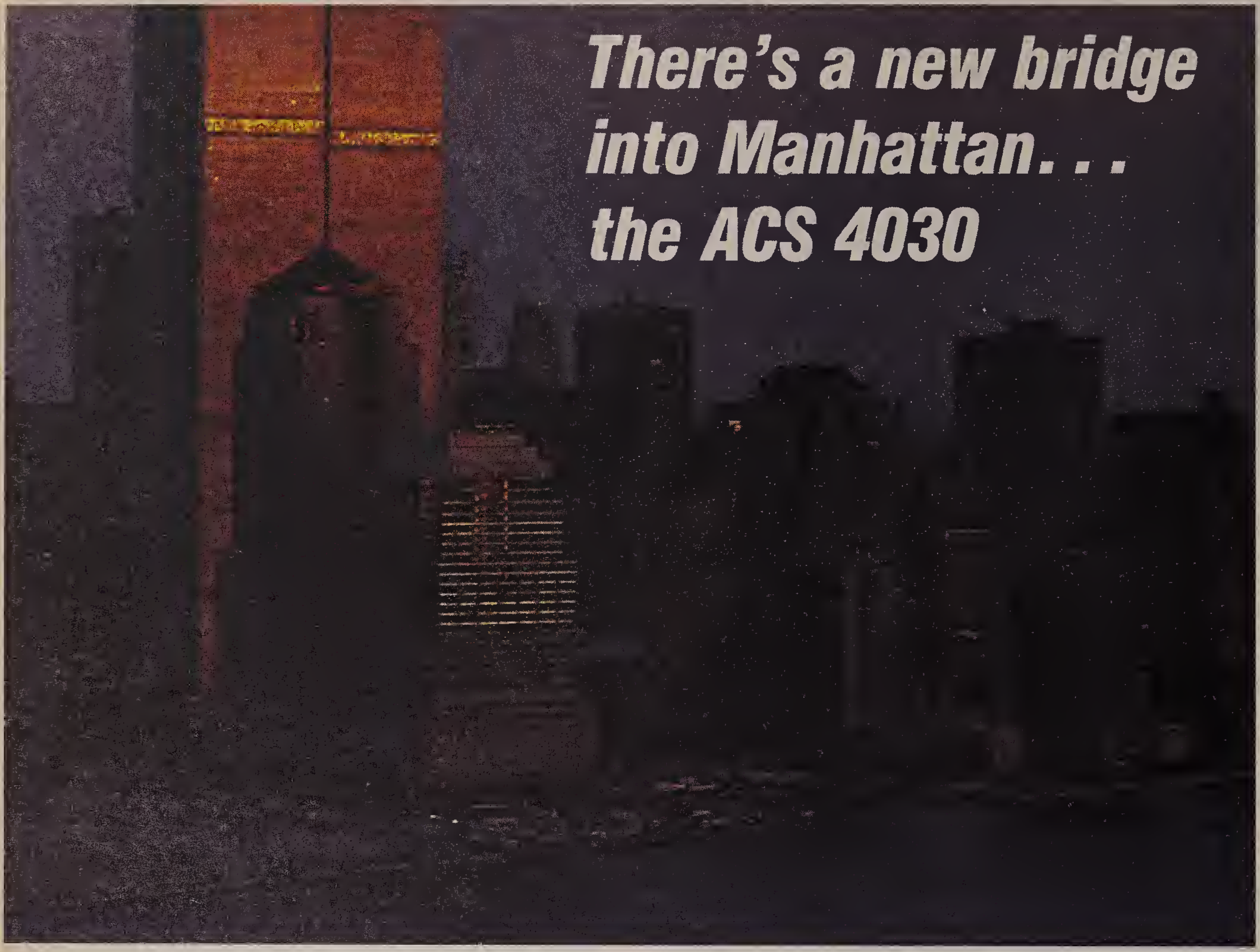
continued from page 17

LAN Manager, isolates faults across a Token-Ring Network running OS/2 software.

Besides the network management fiber-optic backbone, the journalism school will install two Token-Ring Networks at *The Missourian,* the university's daily newspaper, including a remote net at the paper's statehouse bureau in Jefferson City, 30 miles away.

The journalism school will also have two writing center local nets, an editing net, a research center net, a mid-career net for graduate students and professionals, and nets for its KBIA radio station and KOMU television station. KOMU-TV, situated about 16 miles away, will be linked to the main net via microwave equipment, said Harvey Summers, the journalism school's network systems manager.

Although the networks will not use mainframes to store data, users will have access to any of the university's IBM 4381 and 3090 mainframes. Users can access these mainframes from their Personal System/2 workstations at the full 16M bit/sec speed and throughput, Summers said. Currently, the school is using 1,200 bit/sec and 2,400 bit/sec modems to access the mainframes from the journalism school's personal computers, he added.



"The ACS 4030 dramatically cut our communication costs and maintained reliability – at a quarter the price of other Ethernet bridges." Charles Fischer
Director of Operations, Dalcomp, Inc.

Dalcomp, a supplier of online information for the financial industry, needed a better way to connect offices on both sides of the Hudson. Dalcomp had five point-to-point connections using expensive dedicated lines. Dalcomp needed to cut network costs, but couldn't afford to sacrifice network performance. Dalcomp chose the ACS 4030 to connect Ethernets already in place.

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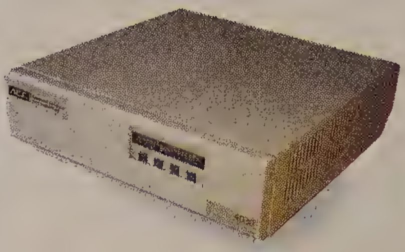

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USERS GROUPS AND ASSOCIATIONS

Worth Noting

More than 40% of the money American companies spend on factory and office equipment today goes toward computers, communications systems and other information technologies, twice as much as they spent in 1970, according to the U.S. Congress Office of Technology Assessment in Washington, D.C.

Dialogue

Do you feel the privacy issues surrounding use of automatic number identification (ANI) are serious enough to slow the implementation of Integrated Services Digital Networks?

“Privacy is an issue, but the called party has an equal right to know who is calling them.

“On the other hand, the ISDN telephone sets at MIT have a feature that enables callers to cloak their calls with anonymity. The feature is a special code users can punch into their phone sets when making calls. The code blocks the transmission of their phone number during their phone calls. This has eased the concerns of groups that man hot lines providing over-the-phone counseling to people in distress. The availability of this blocking code is enough to circumvent any privacy issues surrounding the use of ANI.”

Morton Berlan
Director of telecommunications
Massachusetts Institute of Technology
Cambridge, Mass.

“ANI will do away with anonymous calls, but I don't see anything wrong with that. Most people want to identify themselves to the person they are calling when they use the phone. ANI is just more efficient use of the technology.

(continued on page 22)

Net managers fight for site licensing

Big users voice need for licensing options that ease acquisition and distribution of software.

By Susan Breidenbach
West Coast Bureau Chief

SAN FRANCISCO — The continued resistance of major microcomputer software publishers to offer site licensing is forcing network managers to buy distributed applications for local networks in yesterday's packaging.

The cry for site licensing isn't a new one. Managers have long viewed it as a potentially promising way to streamline the acquisition and distribution of application software, particularly when the individual users of those applications number in the hundreds or even the thousands.

Traditionally, vendors have sold personal computer applications on an individual basis — one software package for one workstation. But under site licensing, vendors would sell a general disk to a corporate user, who in turn would distribute the software to users across the net.

Many suppliers have resisted site licensing. The key vendors “still have a shrink-wrapped mentality” that does not lend itself to the proliferation of robust, network-based applications, according to Christopher Veal, a partner and microcomputer manager at Arthur Young & Co. in San Jose, Calif.

Distributed applications increasingly require that local networks be viewed as single-computing environments, not collections of stand-alone, file-sharing systems. The traditional method of distributing microcomputer software, however, does not lend itself to the evolution of such a view.

To Veal and other managers who joined him on a user panel at the recent MacWorld Exposition here, local nets and site licensing go hand in hand. The panelists called for large users to band together and demand site licensing from vendors.

According to users, such demands have fallen on deaf ears at software giants such as Microsoft Corp. and Lotus Development Corp. “Microsoft won't even talk about site licensing,” said Pat Thompson, a personal computer specialist with GTE Government

(continued on page 42)

EXECUTIVE BRIEFS

BY BARTON CROCKETT

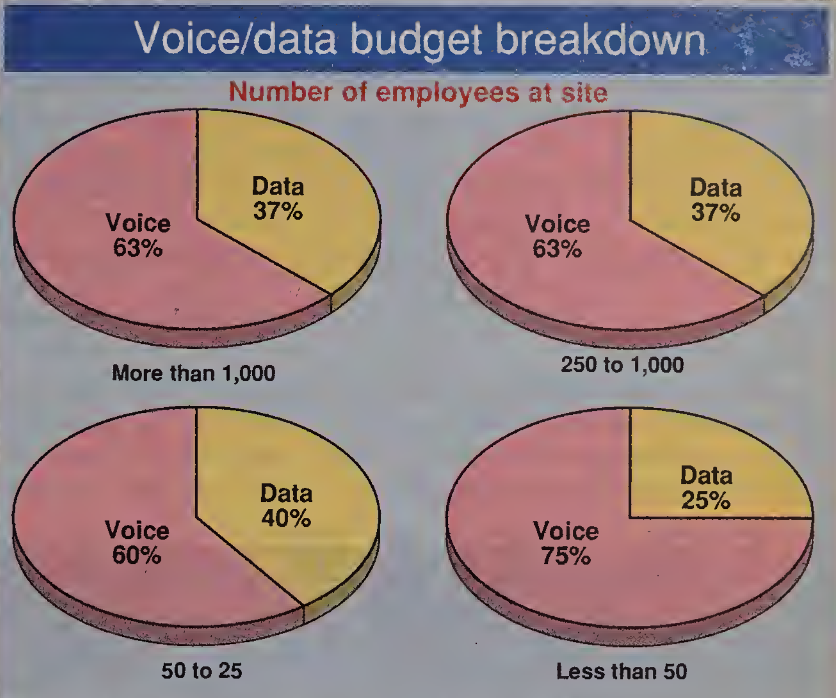
Networks and the national economy. The landscape of American industry is undergoing a fundamental change. Corporations are fragmenting, spinning off operations and giving third parties work they once handled themselves. As this trend continues, information nets become more vital — serving as the tool that lets firms coordinate supply schedules, lower prices and respond quickly to changing markets.

So concludes a recent report called “Technology and the American Economic Transition” by the U.S. Congress Office of Technology Assessment. The report synthesizes work by more than 100 researchers, corporate executives and academics.

The report gives examples of the fragmentation of American industry. More manufacturers, for instance, are having suppliers provide preassembled components that can be put together. Another example is the movie industry. In years past, major movie studios owned nearly every part of their production and supply chain, from theaters to rights to actors. Now the studios assemble teams of actors and producers and sell films to independent theaters and video distributors.

The upshot of fragmentation is that businesses in many industries are becoming more reliant on networks to link independent companies, the report says. In some industries, these nets are dramatically increasing efficiencies. One example, according to the report, is the grocery industry. Industry-wide electronic data interchange systems let grocers track sales and order goods more quickly and efficiently.

These networks and other information systems, the report says, “have the potential to revolutionize the structure and performance of the national economy.” ☑



Percentage of networking budget spent on voice and data communications.

Figures are from a June 1988 survey of 16,000 firms.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: TFS, INC., WESTFORD, MASS.

Users can't afford to wait for promise of broadband

Integrated broadband nets 25 years away?

By Wayne Eckerson
Staff Writer

Many experts claim that integrated broadband networks will support the most powerful and profitable applications and services in the next century.

But for many private network users, broadband services offered over the public switched net may arrive too late to support their rapidly growing bandwidth needs and emerging bandwidth-intensive applications such as high-resolution graphics and video.

Large network users do not plan to wait the 15 to 25 years some experts predict it will take before general availability is announced for integrated broadband networks, also known as broadband Integrated Services Digital Networks.

Many users are already supporting broadband capabilities in their local- and wide-area networks in order to run sophisticated engineering applications such as computer-aided design and manufacturing, factory floor automation and channel-to-channel communications between mainframes.

“Broadband technologies are going to find a home among large users long before they are part of a public switched network,” said Kenneth Phillips, vice-president of telecommunications policy at Citicorp in New York.

Meanwhile, smaller users, which often don't have the resources to support a private network, will probably have little need for the high-bandwidth broadband that ISDN will make available. For these companies, the 56K or 64K bit/sec speeds offered by conventional ISDN will be sufficient to meet most of their future networking needs.

Broadband ISDN proponents, however, claim that the network, once in place, will spawn a host of new applications and spur demand from businesses and residential users. They are confident there will be sufficient demand in the future to justify the expense of building the network today.

“You have to have faith,” said Eli Noam, commissioner at the New York Public Service Commission in New York City. “Broadband ISDN is like many past inventions that had little commercial value when first developed. Broadband ISDN is a solution in search of a problem, not the other way around.”

Cost as the motivator

Some industry observers believe demand — present or future — has no bearing on whether carriers will rewire the public network with fiber to support broadband transmission.

“By the mid-1990s, fiber will be cheaper for carriers to install and maintain than twisted-pair copper wire,” said Henry Geller, director of Duke University's Washington Center for Public Policy Research in Washington, D.C.

“Carriers will begin replacing copper wire with fiber because it will be cost-effective to do so, not because of customer demand for broadband services.”

While there is disagreement about how a public switched broadband network will evolve, many agree it will feature all-digi-

(continued on page 22)

Users can't afford to wait for broadband

continued from page 21

tal, all-fiber circuits connected directly to the home or business. These circuits will support voice, data and video, and will be used for high-bandwidth applications such as high-definition television, video telephony, high-speed videotex and videoconferencing.

Geller and other industry observers generally agree that the public switched network will support broadband transmissions over fiber by the year 2015.

Private broadband

Unwilling to wait until the next century for broadband support through the public switched network, businesses have begun using broadband in their private nets.

McDonnell Douglas Aerospace Information Services Co. runs multiple T-1 channels over fiber and microwave links to interconnect several local sites, according to Lionel Gillerman, manager of network technology for the Cypress, Calif.-based firm.

The broadband links, some of which require 45M bit/sec or T-3 speeds, support communications among McDonnell Douglas' private branch exchanges, CAD/CAM applications and electronic mail.

"Our bandwidth requirements are growing at an exponential rate, which is true for all aerospace companies. The more fiber we put in, the more people will find a way to use up the bandwidth," Gillerman said.

Other users, such as General Motors Corp., are implementing broadband to support communications between computer-driven equipment on factory floors governed by the Manufacturing Automation Protocol standards.

Metro nets using broadband

Metropolitan-area network providers, such as Teleport Communications-New York, are providing broadband facilities on digital fiber networks spanning most of a metropolitan region. Merrill Lynch, Pierce, Fenner & Smith, Inc. is currently using a T-3 fiber link provided by Teleport Communications-New York to connect mainframes at different data centers, said Robert Atkinson, vice-president for regulatory and external affairs at Teleport Communications-New York.

Future uses of broadband will include graphics modeling and on-line data applications that require high bandwidth. For example, Citicorp is developing an application that will enable a treasurer managing corporate funds to communicate in real time with security markets and banks throughout the world, Phillips said.

This application would enable the treasurer to pull up a financial portfolio on a color monitor and watch how changing security prices affect the performance of the portfolio.

Some say that broadband on the public switched network will make it easier for companies to support such applications. In private networks, companies now have to run dedicated lines to users with whom they need to communicate. Public broadband ISDN networks, on the other hand, would offer universal connectivity outside of a private network.

This type of connectivity could, for example, streamline the process of issuing requests for proposal and evaluating and awarding contracts, according to Terry Curtis, associate professor at the School of Communications at California State University in Chico, Calif.

Broadband ISDN would enable multiple companies competing for a contract to submit proposals and request information electronically from the contracting company without significant delay.

Contract bids often involve large file transfers and simultaneous transmissions that would overwhelm today's public network. ◼

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Dialogue

continued from page 21

"The real privacy question centers on what companies do with the large amount of information they acquire about their customers and store in computer data bases. The question about who owns that information has been debated as far back as the Carter administration. It seems there is little restriction on how companies can use that information. For example, phone companies legally own information about customer toll calls that appears in billing information."

Henry Geller
Director
Duke University's
Washington Center
for Public Policy Research
Washington, D.C.

"ANI is part of a much bigger issue concerning privacy rights and the telephone companies. The question really is, 'Who owns customer proprietary network information [CPNI]?'

"The FCC needs to resolve what forms of implied consent or permission phone companies need to obtain before they can distribute CPNI to third-party vendors.

"The phone companies are seeking to obtain a waiver from [U.S. District Court] Judge [Harold] Greene to originate content. This would enable them to use information in their data bases to generate demographic reports about their customers. They could then sell this qualified information to retailers who want to target a specific audience.

"Common carriers should not be in the business of generating specific information about their customers until privacy issues are resolved."

Kenneth Phillips
Vice-president of
telecommunications policy
Citicorp
New York

PRODUCTS & SERVICES

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Worth Noting

See inside for:

- Vitalink's expanded family of Ethernet bridges
- Concord controller boards that support all seven layers of MAP 3.0
- A portable facsimile machine from Nissei
- Castle Rock's bridge for linking Ethernet, Starlan

First Look

Link to switched 56K data service out

Kentrox Industries, Inc. recently announced an option for its TieLink 56 data service unit/channel service unit that enables users to access US Sprint Communications Co.'s switched 56K bit/sec data service, which is expected to become available this month.

By turning off echo cancelers used on US Sprint's digital voice circuits, the TieLink 56's **2100 Hz tone option** enables users to complete switched 56K bit/sec data calls between sites with T-1 access to the US Sprint network. The tone option disables echo cancelers on the 64K bit/sec DS0 channel within a T-1 access line to support the data call. This technique will enable US Sprint to offer switched 56K bit/sec data service at costs below that of AT&T's Accunet Switched 56, US Sprint said.

Currently, service providers use separate dedicated lines to provide switched 56K bit/sec data service to ensure high-quality data transmission.

Echo cancelers used in US Sprint's digital voice network improve the quality of voice transmissions but can erase bits of data.

The TieLink 56 is available with a V.35 data port, RS-232 command ports and RS-449 data or command ports. A piece of data terminal equipment is linked to TieLink 56, which is in turn linked to an office channel unit data port of a D4 channel bank. That channel bank produces a T-1 bit stream.

With the 2100 Hz tone op-

(continued on page 24)

Able unveils new 16-port E-net server

By Laura DiDio
Senior Editor

WASHINGTON, D.C. — Able Computer, Inc. last week announced a 16-port Ethernet terminal server that lets users simultaneously support both Unix and Digital Equipment Corp. VMS operating systems and their different network transport protocols.

The new EASYport 16 terminal server gives users on an Ethernet simultaneous access to both Transmission Control Protocol/Internet Protocols running on Unix systems and DEC's Local Area Transport (LAT) protocols running on VMS systems. Able Computer announced the product at last week's Communication Networks Conference and Exposition '89 here.

EASYport 16 is a stand-alone terminal server that connects to an Ethernet using either thin- or thick-wire coaxial cabling. It supports as many as 16 attached asynchronous devices including personal computers, workstations and host computers.

Each terminal server can establish as many as four active TCP/IP or LAT sessions, resulting in a total of 64 simultaneous incoming and outgoing sessions, according to Dave Allen, an Able Computer application engineer.

It is compatible with DECnet VMS Version 4.0 or later and Unix System V.3 operating systems that support standard TCP/IP implementations, Allen said.

Performance advantage

The 16-port configuration of EASYport gives users a performance advantage over eight-port terminal servers, an Able Computer spokeswoman said. "In LAT systems, the fewer servers there are on the Ethernet, the better the performance," she said. "And more ports on the server mean less traffic on the Ethernet since the information will be multiplexed within the same packet to the same server."

Typically, a system consisting of an eight-port server has twice the packet traffic across the Ethernet. This, in turn, results in twice the number of collisions, the spokeswoman said.

EASYport 16 features both Telnet and RLOGIN (remote logon) host logon procedures; automatic call establishment, which lets hosts automatically log on to the network; password access security maintenance and diagnostic aids; statistics reporting; and print-spooling capabilities.

EASYport 16 is the first in a series of products that Able Computer plans to introduce for the Ethernet, TCP/IP and DECnet markets, a company spokeswoman said. Able Computer, a DEC third-party vendor, also manufactures gateways and host and terminal servers.

The EASYport 16 costs $4,500. It is available now.

For more information, contact Able Computer at 2567A S.E. Main Street, Irvine, Calif. 92714, or call (714) 553-1188. ◼

Proteon offers fiber-optic modem at ComNet show

WASHINGTON, D.C. — Proteon, Inc. last week unveiled a single-mode, fiber-optic modem that will significantly extend the distance between two nodes on a token-ring network.

Proteon introduced the p3282 Single Mode Fiber Optic Modem at Communication Networks Conference and Exposition '89 here. The device is designed to work with the company's ProNET-80, an 80M bit/sec token-ring, fiber-optic network. ProNET-80 provides users with a migration path to 100M bit/sec Fiber Distributed Data Interface (FDDI) nets, according to the company.

The p3282 permits two nodes on a ProNET-80 or FDDI network to communicate over a maximum distance of 30 km, or 18.7 miles, without using a repeater. By contrast, under the IEEE/ANSI 802.5 FDDI standard, which specifies use of multimode fiber cable, the maximum allowable distance between nodes is 2 km, or 1.2 miles.

The p3282 modem provides a fault-tolerant, fiber-optic connection between two nodes on the ProNET-80 ring. Fiber modems convert signals from electrical impulses to bursts of light, which are sent across a fiber and then reconverted to electrical signals at the receiving end.

Single-mode fiber is designed for transmission at gigahertz speeds over distances greater than six miles. Single-mode fiber also uses optical laser technology to transmit the signal instead of LEDs. Lasers have less dispersion and signal loss than LEDs, Proteon said. Laser technology also provides users with a more secure environment than multimode fiber because it is a more precise technology, according to Patrick

(continued on page 25)

Fast Ethernet bridge eases data transfer

Alantec's new Multi LAN Switch features a packet-switching bus that transfers data at 160M.

By Susan Breidenbach
West Coast Bureau Chief

WASHINGTON, D.C. — Alantec, Inc. last week introduced a high-speed Ethernet bridge that it said will alleviate bottlenecks caused by large data transfers.

The company unveiled its Multi LAN Switch (MLS) at Communication Networks Conference and Exposition '89 here. The MLS is a dedicated IBM Personal Computer AT with proprietary technology that turns the AT into a high-speed packet-switching bus capable of transmitting data at a rate of 160M bit/sec.

Up to eight dual-port network adapter cards can be attached to the switch, letting as many as 16 Ethernets bridge with one another across the high-speed bus. In effect, the switch serves as a high-speed backbone, routing data from one Ethernet to another.

The MLS can be used to bridge a mix of Ethernet segments using coaxial, thin-coaxial, fiber-optic and 1M bit/sec Starlan media.

Data is transmitted from one Ethernet at 10M bit/sec until it arrives at the MLS' controller. From there, it is transmitted over the bus at 160M bit/sec. The data is then sent to the appropriate Ethernet adapter and stored in 64K-byte cache memory until it is transmitted at 10M bit/sec over the receiving Ethernet.

Alantec created the unusual bus-based switch because many bridges do not offer an exception-

(continued on page 25)

New X/Windows-based net display station announced

Network Computing Devices unveils NCD16.

By Laura DiDio
Senior Editor

MOUNTAIN VIEW, Calif. — Start-up Network Computing Devices, Inc. recently unveiled a low-cost network display station based on the X/Windows user interface.

The NCD16 is a diskless stand-alone display based on a Motorola Corp. 68000 microprocessor. It comes with custom circuitry for creating advanced bit-mapped graphics and gives users access to X/Windows applications residing on Unix- or Digital Equipment Corp. VMS-based systems.

Unlike other displays, the NCD16 routes application processing back to a host or server and performs the graphics and image manipulation locally. In effect, Network Computing Devices is targeting the legions of networked engineering and scientific users that typically perform complex calculations or design simulations on a personal computer or workstation.

The problem with using those devices, according to Judith Estrin, the company's executive vice-president, is that the application processing is off-loaded to a host so the user wastes the local memory and computational features of a personal computer or workstation.

"With the NCD16, users don't have to dedicate a $10,000 workstation to everyone on the network. Instead, processing power can be shared among a number of users," Estrin said.

By off-loading the application processing to a local network server, minicomputer or supercomputer, the NCD16 reserves its own 1M-byte memory for graphics and windowing manipulation.

Because it operates with X/Windows, the NCD16 runs exclusively on Ethernets and supports the Transmission Control Protocol/Internet Protocol.

The device is part of a marketing strategy the company calls network computing ("Start-up's product heralds arrival of net computing," *NW*, Jan. 23). That scheme favors remote network processing rather than dedicated local network servers, although local servers can still be employed. In this way, users can access a variety of host processors depending upon what application they are running, rather than being limited to accessing one dedicated net server.

The NCD16 provides users with the same advanced on-screen graphics manipulation capabilities as high-end diskless workstations for less than half the price, Estrin said. The NCD16 costs less than $3,000. In com-

(continued on page 25)

First Look

continued from page 23

tion, a TieLink 56 costs $2,750. Without the option, TieLink 56 costs $2,600.

Kentrox Industries, Inc., P.O. Box 10704, Portland, Ore. 97210, or call, (503) 643-1681.

Vitalink expands remote Ethernet bridge line

Vitalink Communications Corp. last week expanded its line of remote Ethernet bridges with a model that provides one or two 64K bit/sec links between remote Ethernets at speeds up to 64K bit/sec.

The **TransLAN 320** rounds out the company's line of remote local net bridges, which includes the high-speed TransLAN III and TransLAN 350. The new TransLAN 320 can support a redundant link between remote Ethernets or a link to two different remote Ethernets. In addition, up to eight TransLAN 320s can be used to connect low-volume remote Ethernet sites to TransLAN III or TransLAN 350 bridges located at central sites.

The TransLAN 320 can be used with dedicated 56K bit/sec digital leased lines, switched 56K bit/sec digital data services and analog leased lines. The TransLAN 320 also supports V.35, RS-449 and RS-232 physical interfaces. All Vitalink bridges, including the TransLAN 320, support the Spanning Tree Protocol, which is an algorithm that provides redundant links between bridges in a net and prevents Ethernet packets from continuously traversing a network of interconnected bridges.

The TransLAN 320 is priced at $9,750, including necessary software.

Vitalink Communications Corp., 6607 Kaiser Drive, Fremont, Calif. 94555, or call (415) 795-6178.

Concord boards link IBM PCs to MAP networks

Concord Communications, Inc. recently unveiled lower priced versions of its **Series 1200** boards that link IBM Personal Computers to nets supporting Manufacturing Automation Protocol 3.0.

The new Series 1200 consists of a net controller board and a modem. Previously, Concord's MAP network controller boards required the use of an external modem. The new controller boards support all seven layers of MAP 3.0 as well as the IEEE 802.4 token-passing net standard.

Controller boards can be ordered with a broadband radio frequency modem board supporting 10M bit/sec transmission or a carrierband modem board supporting 5M bit/sec transmission. Together, the controller and modem board take up two expansion slots on the Personal Computer.

The broadband modem board includes software that lets users tune the modem to any of three send-and-receive channels. Carrierband networks typically use one send-and-receive channel; consequently, the carrierband modem does not need to be tuned.

The new Series 1200 with a broadband modem board costs $2,295. The Series 1200 with a carrierband modem board costs $1,895. Both boards include MAP 3.0 software. Previously, a package consisting of the Series 1200 controller with external broadband modem sold for $2,695, while a package consisting of the Series 1200 controller with an external carrierband modem sold for $2,595.

Concord Communications, Inc., 397 Williams St., Marlborough, Mass. 01752, or call (508) 460-4646.

Portable fax sends personal computer files

Nissei Electric USA, Inc. recently introduced a portable facsimile machine capable of transmitting files stored on IBM-compatible personal computers and portable personal computers.

The **Nissei Fax-305PC** is a stand-alone CCITT Group III-compatible facsimile machine that connects to a personal computer or a portable personal computer via RS-232. Once connected, users can send ASCII text documents stored on the personal computer or portable personal computer to other facsimile machines. Fax-305PC prints incoming documents, while existing personal computer-resident facsimile boards store incoming documents on a personal computer disk.

Fax-305PC comes with Nissei's Personal Total Operating System software, which includes a Nissei word processing application and Quarterdeck Office Systems' Desqview software. Documents created with Nissei's word processing package can be sent via facsimile, while Desqview lets users send documents prepared with Micropro International Corp.'s Wordstar word processing package via facsimile.

Fax-305PC is priced at $1,599, including software.

Nissei Electric USA, Inc., 3 Reuten Drive, Closter, N.J. 07624, or call (201) 768-0085.

Bridge links Ethernet, thin-wire Ethernet, Starlan

Castle Rock Computing, Inc. last week introduced a stand-alone bridge capable of linking Ethernet, thin-wire Ethernet and Starlan networks.

The **ES200** is a two-port stand-alone bridge that provides media access control-layer conversion. This means devices on an Ethernet running Transmission Control Protocol/Internet Protocol on one side of the bridge can communicate with Starlan-attached devices running TCP/IP on the other side of the bridge. The ES200 monitors traffic on both sides of the bridge at the rate of 25K packet/sec.

The bridge builds a routing table by copying the addresses of users who send packets. This table is used to determine the

We see network
from a different
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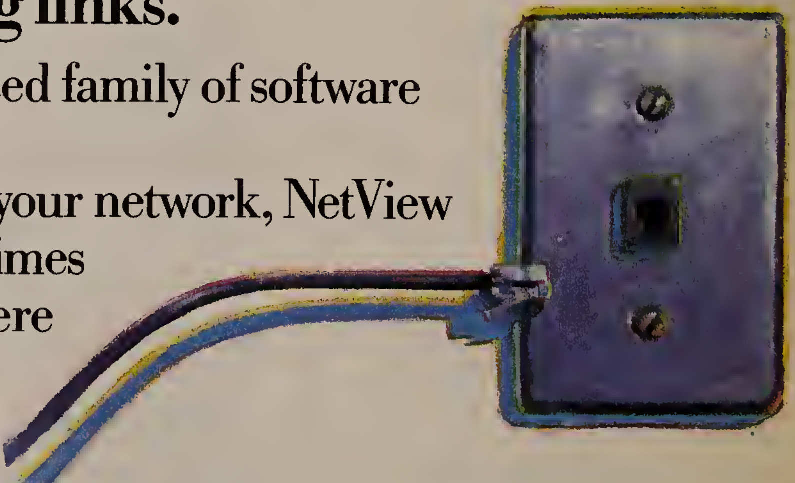

side of the bridge on which a destination device is located.

Packets are sent across the bridge at up to 12.5K packet/sec.

The ES200 supports the Spanning Tree Protocol, which is an algorithm used to provide redundant links between bridges in a network and prevents network packets from continuously traversing a net of interconnected bridges.

The bridge also supports the Simple Network Management Protocol, which enables network management software applications to monitor and control ES200s.

Equipped with two network interface ports and internal thin-wire Ethernet transceivers, the ES200 costs $2,750.

Castle Rock Computing, Inc., 2841 Junction Ave., Suite 118, San Jose, Calif. 95134, or call (408) 434-6608. ◘

New net display station announced

continued from page 23

parison, high-end diskless workstations from Sun Microsystems, Inc. and Apollo Computer, Inc. cost from $6,000 to $10,000, and much of their processing power often goes unused, she said.

The NCD16 will also compete against ASCII and IBM 3270 terminals in networks, Estrin said. These devices, although comparably priced, lack the advanced X/Windows management and graphics capabilities of the NCD16, she added.

While the NCD16 is initially targeted at engineering and scientific markets, the company plans to broaden its market to penetrate mainstream office applications.

Early target user applications include office automation tasks running DECwindows and using the NCD16 as the display vehicle, Estrin said. Users with that type of application include hospitals, universities, government and manufacturing facilities.

Besides the cost savings, the NCD16 has some ergonomic advantages over its workstation rivals. It is much smaller, about half the size of a workstation, and is quieter because it does not have a fan. The 16-in. workstation display has a 1,024 by 1,024 pixel resolution.

The NCD16, which is available now, costs $2,550, including monitor, keyboard, mouse, software, one RS-232 serial port and one Ethernet interface.

For more information, contact Network Computing Devices at 350 North Bernardo Ave., Mountain View, Calif. 94043, or call (415) 694-0650. ◘

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Fast Ethernet bridge eases data transfer

continued from page 23

ally high transmission speed, according to the firm. Consequently, large data blocks bog down most bridges' throughput.

Alantec surveyed users about data bottlenecks at bridging points and concluded that the internal speed of the bridge needs to be approximately 10 times faster than the network in order to handle peak loads.

Using this formula, the 160M bit/sec MLS more than accommodates 10M bit/sec Ethernet, and it would also have sufficient speed to support 16M bit/sec IBM Token-Ring Networks.

"We looked at the way mainframes do large data block transfers and essentially implemented that architecture in a custom piece of silicon," said Jim Buerkle, vice-president of sales and marketing for Alantec.

A primary target for the product will be Ethernet sites with large numbers of engineering workstations and VAX clusters.

"For example, Sun [Microsystems, Inc.] has powerful X/Windows machines with no local disk drives, so they are generating a lot of bursty, heavy traffic on the network," Buerkle said.

Two unique features in the MLS bridge are the use of a triported memory scheme and loop-back diagnostics that test all communications ports. Triported memory enables the switch to make use of more than one section of the processor's memory at a time. The product also provides real-time network management statistics and archives an activity audit trail.

The MLS, which will be available in March, is compatible with Alantec's SmartLan Manager and SmartBridge products. A four-port configuration is priced at $9,800, and two-port expansion cards cost $2,000 each.

For more information, contact Alantec at 101 Hammond Ave., Fremont, Calif. 94539, or call (415) 770-1050. ◘

Proteon offers fiber modem at ComNet

continued from page 23

Courtin, Proteon's president.

The p3282 monitors signals to detect transmission failures and wiretaps. If a system fails or a tap is detected, the p3282 modem automatically switches to an alternate path without disrupting the network. Actual network installation is also simplified, since repeaters are not needed unless the user exceeds the maximum allowable distance, Courtin said.

Metropolitan area networks

Proteon, he said, is positioning the new p3282 modem for use by large data communications users, including carriers and universities, that are planning to install 150M bit/sec metropolitan-area networks.

Many users have already begun to look at applications for metropolitan-area networks, Courtin said. "Many telecom businesses now have single-mode fiber laid out between central offices. Telecom users plan their installations 20 years into the future, and they're already starting to experiment with [metropolitan-area networks]," he said.

The p3282 Single Mode Fiber Optic Modem costs $10,000.

For more information, contact Proteon at 2 Technology Drive, Westborough, Mass. 01581, or call (508) 898-2800. ◘

OPINIONS

NETWORK SECURITY

BY JOHN MCQUILLAN

Trustworthy personnel are key to secure networks

The recent Internet virus was Page 1 news, even in the business and general media. Industry and government leaders are now concerned about security threats to our many growing computer networks. However, much of this concern is misplaced. Most security problems arise not in the networks but in the computer operating systems and the personnel that operate them.

For example, in the Internet virus case:

- Should the network have prevented Robert Morris Jr., the alleged perpetrator, from logging on and sending the virus-laden messages? No, because he was a legitimate user. In fact, he was a user with especially high privileges and access rights on his local host computer.
- Should the Advanced Research Projects Agency Network, Military Network and other Internet segments have detected the virus in the electronic mail that was passed from host to host? No, because these networks were never programmed to understand the contents of E-mail documents.
- Should the network have detected an unusually high level of traffic and reacted to control it? No, because the host computers connected to the network became saturated with the results of the virus long before the network did.

> If the bank guard can't be trusted, the thickness of the safe's walls doesn't matter.
>
> ▲▲▲

In summary, did the network do anything "wrong"? Not really. A legitimate user sent E-mail, and the network delivered it as it was designed to.

What went wrong then? Complex computer system security has always had two weak points: the operating systems that govern the computers and the people who program, operate and maintain them. There are many other possible points of vulnerability — for example, the application programs themselves — but these are often less cause for concern if the operating system has been designed in a highly secure manner.

The ideal operating system would ensure that only legitimate users have access to the computer, that they have access only to those application programs they need to use and that they send messages only to those users in specific communities of interest. Further, the ideal operating system would ensure that any one user's actions are completely isolated from the actions of all other users. This would prevent one user from penetrating another's files, disrupting the running of someone else's program or masquerading as another user. These are difficult challenges indeed, but significant progress has been made in many of these areas.

The greater challenge is to develop a way to guarantee that the people who work with the internals of computer systems can be trusted. In the Internet virus case, it is alleged that Morris was a Unix user intimately acquainted with the system's password protection schemes. The situation can be compared to that of a bank guard who is entrusted with the combination of the safe and one night opens it and makes off with millions of dollars. Regardless of the thickness of the safe's walls or the complexity of its combination, unless there are procedures for ensuring that personnel can be trusted, security is compromised. The same holds true for computer networks.

In summary, while our industry faces many serious computer security problems, the security of the networks per se is not the greatest of those problems.

McQuillan is president of McQuillan Consulting in Cambridge, Mass. He assists users and vendors in planning future communications systems.

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EDITORIAL

The latest episode in the never-ending price cap saga

Announcer speaks as closing credits of Wheel of Fortune *roll across the screen: "Be sure to stay tuned for* Price Caps. *Today, Washington insiders flex their muscle to disrupt Dennis Patrick's best-laid plans."*

Cut to commercial for laundry detergent.

Cut to image of the U.S. Capitol. Titles roll to the sound of organ music.

Announcer: "Welcome to Price Caps, *the continuing saga of a major new regulatory proposal and the personalities behind it."*

Organ music swells to a crescendo, as the scene shifts to a smoke-filled conference room . . .

Does it seem as though the price cap issue has taken on the aspects of a soap opera, a never-ending drama of intrigue and political gamesmanship?

In case you missed the latest episode in this slow-moving saga: At the 11th hour, protagonist Dennis Patrick, chairman of the Federal Communications Commission, yanked the price cap issue off the agenda of a recent FCC meeting. Under pressure from key congressional figures, Patrick and company rescheduled the vote on implementing price caps to March 16.

It seems that Congress wants more information about how price caps would work and what impact they would have on those all-important constituents. Influential members of Congress — and a number of other groups — say the FCC has a good deal more explaining to do before it abandons rate-of-return regulation.

The show has been on the air since August 1987, when Patrick — a man with a mission — introduced the price cap plan.

Over time, viewers of the show have come to expect controversy and contention, posturing and prognostication, infighting and insider politics. Along the way, Patrick has sparred with Congress on price caps and other issues. Those skirmishes have made for some of the more exciting episodes.

> The FCC needs to make a more convincing case that price caps would benefit business and residential consumers.
>
> ▲▲▲

But while viewers have become familiar with the personalities of the players, they still don't have a good idea of how price caps may change the regulatory landscape.

Will carriers have too much flexibility under price caps? Will prices change too often? Who will reap the benefits of increasing network productivity, consumers or carriers?

The FCC claims that consumers would save $1.6 billion during the next four years under price caps. But a major consumer protection group claims that users would have paid $7 billion more for services during the past decade if price caps had been in place.

Despite the confusion, it isn't clear that users want the FCC to scrap the price cap plan. Even ardent opponents understand the goals the FCC is trying to achieve with price caps.

However, it is clear that the FCC needs to make a more convincing case that price caps would benefit business and residential consumers and that safeguards can be implemented to protect consumers.

For that reason, the FCC was wise to delay action on price caps. To have forged ahead against the wishes of Congress would have put the agency into a tug-of-war it couldn't hope to win. Clearly, Patrick has seen the need to improve relations with the legislative branch.

Perhaps the FCC should postpone action on price caps even further than mid-March — take the price caps show off the air for a time while key issues are resolved.

The controversy and confusion surrounding the price cap plan are engendering skepticism and mistrust among users. It's time to put aside the melodrama and make some progress with this important matter.

OPINIONS

SCIENCE NETWORKING

BY MARTYNE HALLGREN

For national research net, end users justify the means

As discussions concerning a national research network continue, the question of why the network is being built is no longer asked. But it should be.

A lot has been said about how the U.S. competitive profile is sinking in the world marketplace and how a national research network could remedy this situation. But while valid, these points don't answer the original question.

The network is being created because our scientists and researchers need it to pursue their scientific research initiatives. The national network will change how research is conducted and, as a result, it will advance scientific frontiers.

A national research network will facilitate the development of new products and the improvement of existing ones, thereby opening new markets. With competing countries developing their own research networks and studying many of the same grand challenges of science as the U.S., we cannot afford not to have a national research network of our own to tap into these markets.

Also, a national research network will provide researchers with communications, collaboration and computing capabilities that have only begun to be explored. The communications capabilities range from simple bulletin boards to geographically distributed scientific data bases to sophisticated cooperative processing between supercomputers and high-level workstations generating visual output at remote sites.

The communications capabilities also enable scientists from different organizations to collaborate on a single research problem without having to be at the same location. In this way, the network allows scientists to develop productive long-term collaborations in which the individuals involved can be mobile but the research remains stable.

The national research network would also provide scientists with access to national scientific centers, where they can use state-of-the-art supercomputers. Scientists can operate these supercomputers using proven computational techniques or innovative approaches that take advantage of the supercomputers' special characteristics.

This allows researchers to address the same problem from a new perspective, which may result in breakthroughs as questions are answered or new questions arise.

Today's national research network encompasses the entire Internet community, a collection of loosely connected networks that use the Department of Defense's suite of network protocols, commonly known as Transmission Control Protocol/Internet Protocol. These nets include the Advanced Research Projects Agency Network, the National Science Foundation Network, mid-level or regional networks such as the New York State Educational Research Network and local networks at universities and research institutions.

> The net must have a coordinated support system dedicated solely to users.

▲▲▲

The mid-level networks continue to expand as more institutions implement their own networking strategies. Mid-level networks, such as statewide networks, are being created as state governments recognize the importance of research networks to the economic development of their states. Each network has its own funding source, administration and management structure, technical engineers, user support structure, strategies and goals for the future.

No clear-cut designation of responsibility now exists to support the end user when problems arise in this environment. Many researchers know the frustration of being passed from one organization to another while their Internet problem remains unresolved.

If the national research network is to be successful, end-user service must be its priority. The network must have an orchestrated, coordinated support system dedicated solely to users, not to the technology.

Such a support system requires a balance between central control and distributed support, where the central force guides the efforts of the distributed organizations, providing the focus and strategic direction of the project and ensuring that the distributed organizations are fulfilling their commitments.

The distributed organizations, in turn, offer the operations and user services necessary to deliver an effective tool to the researchers. By working cooperatively, the central support system and the distributed organizations will provide users with the seamless environment lacking in today's networks.

The current environment of loosely connected organizations has encouraged the development of a national research net. But to attain an acceptable level of service, we must reevaluate the current situation, focusing on the end goal of a national research network for scientific use.

A plan for coordinated organization, operation and support structures should be conceived and implemented. For this to happen, the funding agencies, the research institutions and the users must work in concert to bring about the necessary changes.

The success of the national network will not be judged by the amount of money spent, how fast it is or the technology that supports it. If it does not satisfy user needs, then it is a failure — both because of the waste of time, effort and money, and because of the loss of scientific advancement that would have been possible had it lived up to its expectations.

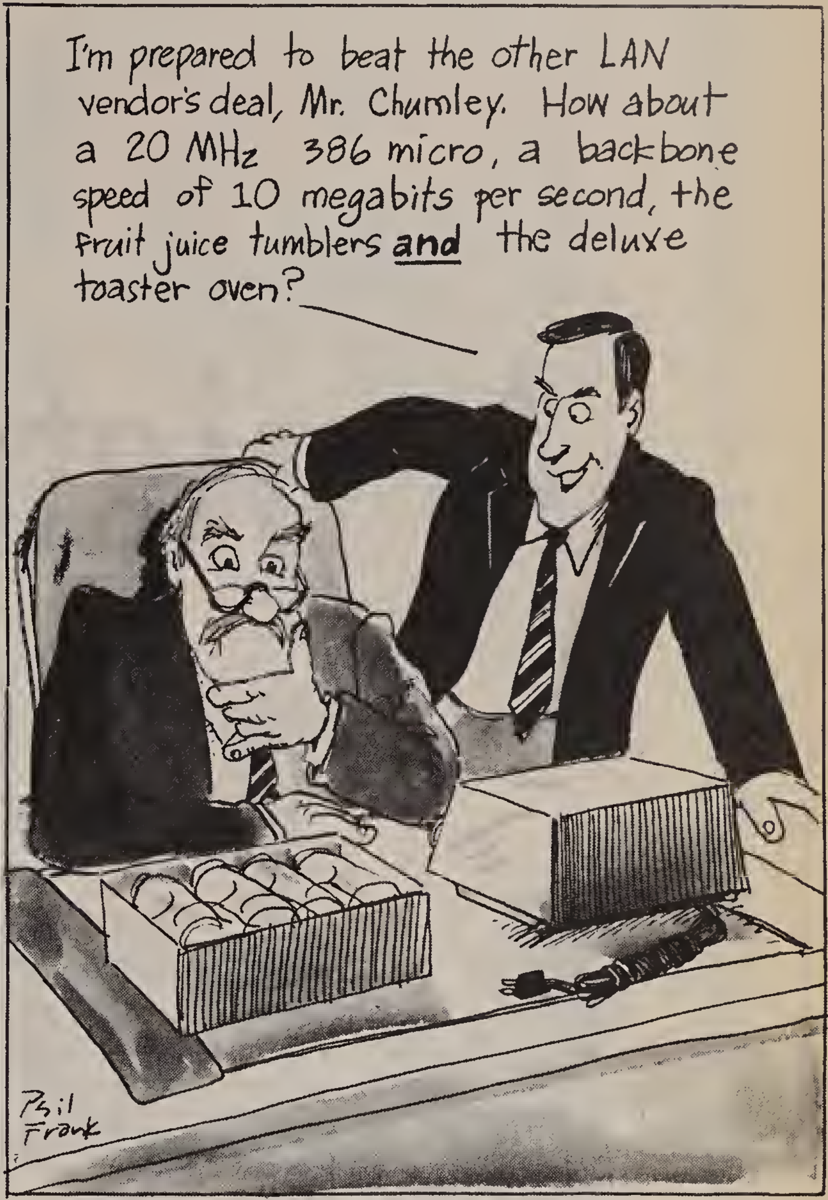
Without a coordinated support system, the victims of the mishmash of networks will be the users — the very scientists and researchers for whom the network is intended to help.

The evolution of the national research network has begun a revolution that can change the very fabric of research in the U.S. The cost of not developing a coordinated, orchestrated support system will be high. How can this country afford not to do it right the first time?

Hallgren is technical advisor for networking issues at Cornell University's Center for Theory and Simulation in Science and Engineering in Ithaca, N.Y.

TELETOONS

BY FRANK AND TROISE


I'm prepared to beat the other LAN vendor's deal, Mr. Chumley. How about a 20 MHz 386 micro, a backbone speed of 10 megabits per second, the fruit juice tumblers **and** the deluxe toaster oven?
Phil Frank

and another thing . . .

Memo to vendors:

Want three easy ways to impress folks on your mailing list?

Stop sending literature and press releases for one month, send only information that has something to do with reality, and stop putting the stuff in oversized folders.

The following points are offered in justification:

- **Give it a rest.** A moratorium will allow the industry to catch up on all that's been announced, released, introduced or offered in a different color since Comdex.
- **Reality check.** Multiple announcements of such "news" tidbits as "Bob has been promoted to junior vice-president of odd DB9 connectors" do little to enhance a vendor's reputation.

Also, what could possibly be done with the 27 8-by-10 glossies of modem innards received here each week? We tried putting them on bulletin boards, but the walls began cracking under the strain.

- **Get it down to size.** The colorful, oversized literature folders will not fit in a file drawer without being bent, folded or mutilated, whereupon the enclosed material often leaps out like a jack-in-the-box on caffeine pills.

It also may cause recipients to deep-six the stuff in frustration.

Thanks for your time.

DEATH AND TAXES AND CHILDBIRTH! It seems that there's never a convenient time for any of them. But there's never been a better time for you to write a guest column for *Network World*'s Opinions pages — which is easier than ceasing to breathe, paying the government or bearing a baby.

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Manuscripts should be letter-quality, double-spaced and between 600 and 900 words in length. Disk or modem submissions are preferred.

If you'd like to write a column, contact Steve Moore, features editor, *Network World,* Box 9171, Framingham, Mass. 01701, or call (508) 820-2543, ext. 732.

HEALTH CARE

A picture of health

Vigorous activity in health care information systems could give the industry a new view and a new look.

By KENNETH RILEY

No industry is more people-centered and compassion-intensive than the field of health care. Ironically, it is technology, in the form of networked information systems, that has tremendous potential to help people in this otherwise human-dependent field to realize their goals.

The health care industry is in a state of rapid transition, partially due to changes in how health care services are financed.

Changes in federal third-party reimbursement regulations, known as the Prospective Payment System, have created competition and a "survival of the fittest" atmosphere in an industry that had never before faced competition. Demands for information by regulatory bodies as well as public and private third-party medical bill payers are straining many organizations' data processing staffs.

Many health care organizations are now attempting to develop plans for long-range information systems to meet these demands and gain a competitive edge. This transition is causing hospitals and other health care providers to view computer networks as a way of protecting their current investments in information systems while gaining the efficiencies and economies they need.

Today's environment

The most prevalent model in hospitals today is that of a mainframe-based, centralized hospital information system running patient accounting and financial applications.

However, because of the complexity of clinical functions and because no vendor has developed optimum applications serving every clinical and financial area, various departments have implemented minicomputer-based systems to solve their specialized information systems needs.

Since these systems typically are installed in a stand-alone manner, they usually include their own order entry and patient registration. Placing an order for a medical service, such as a lab test or a medication order, can result in a situation where the same order must be manually entered twice, resulting in additional cost, time lag and increased chance of error.

This lack of integration among various health care computer applications is a problem many hospitals now face. Many in the industry view the implementation of an integrated clinical and financial data base as a way to contain health care costs and to ensure optimal use of medical resources.

Why haven't integrated systems been implemented already? Until now, there has been no financial incentive to invest in complex information management networks. Another reason is the complexity of the data itself; it typically contains third-party billing information, unstructured text and high-resolution images.

Local networks

The most significant and unexpected event in health care computing recently has been the enormous acceptance of the personal computer. The most significant future change will be the networking of these microcomputer/workstations in a cooperative peer-to-peer fashion with one another and with mainframes. The next generation of information technology will see an accelerating trend toward more intelligent workstations, bedside terminals and clinical data bases.

Hospitals are currently evaluating local network technology as the transport vehicle for distributed computing.

A departmental local network would help hospital departments quickly develop shared data base applications suited to their needs. An organizationwide

(continued on page 30)

Riley is a senior manager with the network consulting practice of Ernst & Whinney in Pittsburgh.

ILLUSTRATION ©1989 CHRIS DEMAREST

LINEN
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(continued from page 28)

backbone local net would allow the sharing of information among various departments on different networks.

Supporting a variety of devices, however, can present substantial compatibility problems. For example, terminal transparency — whereby a user at a terminal can log on and run various applications on separate systems connected to one or more networks — is a desirable goal.

While standards such as ANSI 3.64 exist, present health care application software is typically written for other terminal types, which do not conform to this standard. ANSI 3.64 defines a set of codes used to control the standard functions performed by most asynchronous display terminals.

The International Standards Organization's (ISO) Open Systems Interconnection model will provide a device-independent Virtual Terminal protocol. However, it will also necessitate rewriting existing health care software that uses extensive keyboard mapping and visual attributes.

Interface standards

The major obstacle to network integration remains the combination of existing and replacement systems into a single application architecture. As part of the construction of this architecture, several communications standards for the health care industry are in various stages of development. These standards are being created with the intention of simplifying the task of networking computer systems within and between health care facilities.

Two of these standards are Health Level 7 (HL-7) and the IEEE P1157 Medical Data Exchange (MEDIX). Both of these efforts rely on OSI protocol options wherever possible. Because users generally have made a considerable investment in existing application software and its associated operating system, it is clearly important that any standard allow such existing software to be used whenever possible.

The HL-7 standard currently addresses the interface among selected applications in a health care environment. These include communicating key sets of data:

- From an admitting, discharging and transferring system and other systems that need admission or registration information.
- From an order entry system that manages the processing of patient orders on

(continued on page 38)

Other medical standards committees

Several other groups besides the Health Level 7 (HL-7) and the IEEE P1157 Medical Data Exchange (MEDIX) committees are working on medical interface standards.

"There are four or five standards efforts going on in the medical world that I know of — probably more — and most of us have decided that we need to talk to each other," says David Hill, manager of computer tomography and magnetic resonance research and development at Siemens Medical Systems, Inc. in Iselin, N.J., and a cochairman of the American College of Radiology/National Electrical Manufacturers Association (ACR/NEMA).

An ad hoc committee, the Health Care Information Standards Coordinating Committee, was recently formed so that all the various groups — the American Society for Testing and Materials (ASTM), ACR/NEMA, IEEE 1073 and the MEDIX and HL-7 committees — could get together and find out about one another's standardization efforts.

According to Hill, ACR/NEMA is attempting to develop a standard interface to connect imaging equipment such as computer tomography and magnetic resonance devices to networks and information systems.

The goal of this development effort, which began about seven years ago, is to eventually perform all medical imaging digitally. Instead of using film, images would be transmitted throughout a computer network to be viewed on workstation screens.

The Digital Imaging and Communications Standard issued by the group has three parts: a data dictionary, a series of Open Systems Interconnection-compliant protocols and a physical connection specification for a 50-pin connector. Although imaging technology requires large amounts of bandwidth, the standard doesn't address that issue.

"Our assumption was that this [standard] will be used both on very high-speed equipment that ships huge amounts of data and on [equipment] that is much less expensive and doesn't ship enormous quantities of data," says Hill. "We wanted a standard that did not require an enormously elaborate interface and yet would not limit development."

The ACR/NEMA specification assigns no limit to the size of images. "That's a big question in the medical world — what [amount of] resolution is enough," says Hill. "To see all the detail of a normal chest X ray, you will probably need something like 4,000 by 5,000 [pixels]."

The group issued an original version of the standard in late 1985 and is planning to issue a revision in 1989. The new version will be basically the same as the 1985 one but will also address some specific nontechnical medical issues and new technologies, such as the laser camera.

(continued on page 38)

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TOP is a trademark of the Boeing Company.

Linking up down under

Recent deregulation of Australia's telecom industry makes communications between the island continent and the U.S. easier than ever.

CONTINUED FROM PAGE 1

seas Telecommunications Commission (OTC). Until recently, these carriers have had well-defined and mutually exclusive monopolies:

- **Telecom Australia** has had a monopoly on basic public network services within Australia.
- **AUSSAT,** the Australian national satellite service, has been the main provider of private domestic network facilities.
- **OTC** has held the monopoly on international network facilities.

Intra-Australian services

Telecom Australia provides telecommunications services within the country, including many domestic voice and data services beyond basic telephone service. These include Austpac, which is the Australian X.25 packet-switching service, and Datel, the public analog service. Datel is available on the public switched network and on private leased lines at speeds ranging from 300 bit/sec to 9.6K bit/sec. Also available is digital data service, a leased-line offering that can be used for point-to-point or multipoint configurations.

Telecom Australia also offers the Iterra network, a satellite-based data service that is primarily used to provide voice-grade services to remote areas but is also used for point-to-point digital data transmission. The company's Megaband offering is a high-capacity digital transmission service that carries data, voice, facsimile and video. One service that falls under the Megaband umbrella is Megalink 2, a 2.048M bit/sec service (the equivalent of European T-1). Megalink Radio Services is a digital radio service that offers speeds of 2.048M bit/sec and 8.448M bit/sec.

In addition, Telecom Australia offers an electronic data interchange network called Tradelink and an electronic funds transfer and point-of-sale access service called Tran$end.

Telecom Australia is also developing Queued Packet and Synchronous Switching technology for high-speed transmission requirements. This technology will be used for metropolitan- and wide-area networks using 34M bit/sec or faster transmission rates. The service will be marketed as Fastpac.

Digital Metropolitan Service (DMS) is another new technology the carrier is developing. Essentially a digital data-type service catering to small and midsize business customers, DMS should be available in early 1989.

AUSSAT is currently restricted to serving only Australia. Later

(continued on page 32)

Korostoff is a senior market analyst in communications with International Data Corp. in Framingham, Mass.

ILLUSTRATION ©1989 ANDREA FARACLAS

(continued from page 31)

this year, however, it will begin offering services internationally.

Businesses using AUSSAT's services for private networks should be aware of regulatory restrictions. The Australian government has strict rules prohibiting the resale of private network facilities, and even with deregulation, these rules are not expected to change.

OTC's international services

OTC was founded by the federal government in 1946 to provide all of Australia's international television, text, data and maritime services. However, due to the changing regulatory environment, the company is now allowed to compete with Telecom Australia by offering services within the country.

OTC offers various telephone services, including International Dial Direct, which allows callers to dial straight through to subscribers in nearly 200 countries; Country Direct, which allows callers to the U.S., Canada, Britain or Japan to dial through to an operator and charge the call to a home or business number, or credit card; and international toll-free service.

The carrier also offers other international services such as basic telex service with store-and-forward options; Data Access, an international X.25 packet-switched network; and Dialcom, an electronic mail network licensed from Dialcom, Inc., a subsidiary of British Telecommunications plc. In June 1988, the company began offering videoconferencing between Australia and the U.S., Japan, most of Asia and some European countries.

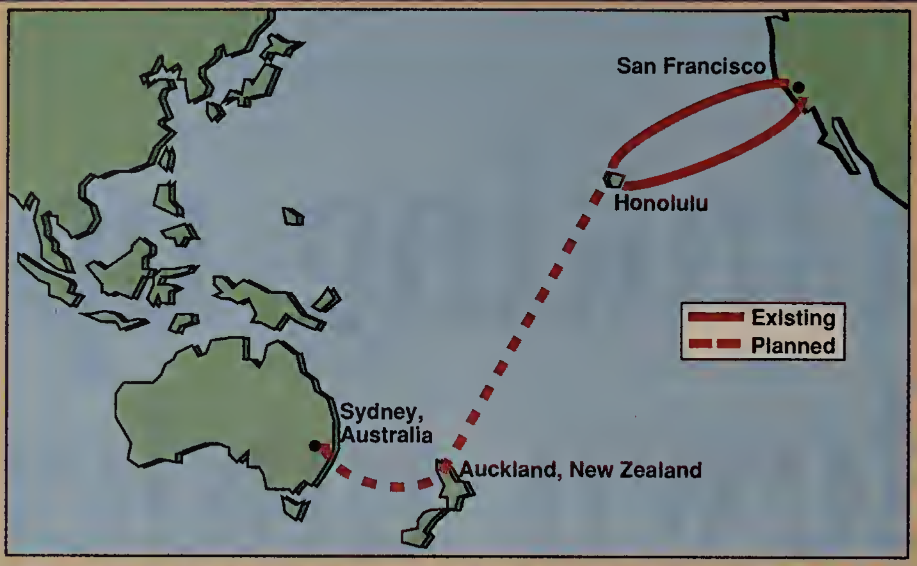
> OTC is expecting an increase in Australia-to-U.S. communications and is investing in undersea fiber.
>
> ▲▲▲

OTC also offers Skystream, a digital international private-line satellite service based on Intelsat Business Service technology. Skystream's leased lines offer speeds ranging from 56K bit/sec to 2.048M bit/sec. Skystream is currently available between Australia and New Zealand, Hong Kong, Singapore, Japan, the UK and the U.S. Other countries expected to receive the service by the end of 1989 include Canada, France, South Korea, Sweden and West Germany.

OTC is expecting a significant increase in demand for Australia-to-U.S. communications and, in preparation, is investing in undersea fiber-optic cable.

For the first leg of its fiber route, OTC is laying cable between Sydney, Australia, and Auckland, New Zealand. The second leg will be from Auckland to Honolulu. Existing fiber-optic cables already connect Honolulu and San Francisco (see figure on this page).

OTC undersea fiber-optic links



GRAPHIC BY SUSAN SLATER

SOURCE: OTC, SYDNEY

The OTC cable will provide capacity far in excess of what will be required for many years, according to the company. OTC will eventually use this excess capacity to offer a new range of data transmission services, according to Greg Dunfield, OTC's assistant vice-president. "If you can provide cheap bulk data transmission," he says, "you can change the way people do business."

Aussie deregulation

Users whose business depends on frequent voice or data communications between the U.S. and Australia should be aware of the recent deregulation of the Australian telecommunications industry.

In 1988, the Australian government issued a policy statement that partially deregulates the telecommunications industry. Known as the May 25 Communications Policy, the statement's main points are summarized as follows:

- Telecom Australia and OTC retain their basic service monopolies, which include public switched data, voice, text, video, public Integrated Services Digital Net-

work, leased circuits and the mobile telephone network. The shared use and resale of basic transport over private networks will continue to be restricted.

- Value-added services will be opened to full competition. Licensing of services will be administered by Austel, a newly formed, independent regulatory authority. Austel will ensure that value-added services do not intrude on Australian Telecom's and OTC's monopolies, and that Australian Telecom and OTC do not subsidize value-added services with revenue from monopoly services. Austel is still in the process of determining which services are basic and which are value-added.
- Currently, customer premises equipment sold in Australia must be licensed and approved by Telecom Australia. However, with deregulation, Austel will assume this role beginning in July. U.S. companies opening operations in Australia should be aware that until July, Telecom Australia still has regulatory approval for licensing of customer premises equipment.
- Before deregulation, Telecom Australia also had the monopoly on customer premises equipment maintenance. The market became open to competition at the beginning of this year.

Advice to U.S. businesses

U.S. companies planning to install U.S.-to-Australia networks should inform both the U.S. and Australian carriers of the type of data communications equipment, particularly modems and multiplexers, that they will be connecting to the network.

"Users must provide a clear picture to their U.S. and Australian carriers of what specific equipment they will be connecting to the network," says Dunfield. Due to differences in the facilities provided in the U.S. and Australia, data transmission equipment may have to be modified before being used in Australia.

Users have several options for leasing lines between the U.S. and Australia. Depending on whether they want their U.S. vendor to make all of the arrangements for them or choose to do it themselves, users could receive anywhere from one to five bills for an international leased line. The choice is simply a matter of convenience and price.

Probably the most frustrating problem that communications managers must cope with is determining the source of failure on international leased lines. "The problem of finger-pointing is far more complex with international leased lines than domestic ones," says Steve Kropper, senior telecommunications consultant with International Data Corp., a market research firm in Framingham, Mass. "Users who think finger-pointing is a problem in domestic leased lines will be in for a shock when they start to lease international lines."

Depending on the user's requirements, OTC will assume network management responsibility. Tom Barker, OTC's vice-president, says, "Some of our clients who lease international circuits request our network management services. In these cases, we will monitor the leased line to determine if any problems are from the international circuit or the local loop."

E-mail to the rescue

One of the biggest hindrances to international business communications has always been time differences. A New York businessman who picks up the phone at 9:05 a.m. to call an Australian counterpart must remember that in Sydney, it's five minutes past midnight.

One way to solve the time-difference problem is to use E-mail. The store-and-forward features of E-mail make it an ideal technology for any company that must communicate with offices or clients in different time zones.

"Our service offers direct access to Australia, and we see demand for U.S.-to-Australia service increasing," says Kenneth Murphy, product manager for electronic mail at GE Information Services in Rockville, Md. "For our U.S. clients, electronic mail helps alleviate the time zone problem."

> "Finger-pointing is far more a problem with international lines than domestic," Kropper says.

▲▲▲

Videoconferencing

Some business transactions require face-to-face communication. And while videoconferencing is costly, it beats the expense of a 15-hour flight from New York to Sydney.

While the time difference demands some flexibility, synchronization isn't altogether out of the question. For example, a videoconference at 8 a.m. Sydney time would start at 5 p.m. New York time.

One often-heard objection to videoconferencing is the cost of setting up facilities. However, public facilities are available in both the U.S. and Australia. OTC has videoconference studios in Sydney and Melbourne. Videoconference rooms are also available in various cities in the U.S. from US Sprint Communications Co. and a Washington, D.C.-based company called the Satellite Theater Network.

U.S. companies with operations in Australia have many options for both intra-Australia and Australia-to-U.S. communications. And with the recent move toward deregulation of the Australian telecommunications industry, many new services are likely to be introduced over the next few years. ◘

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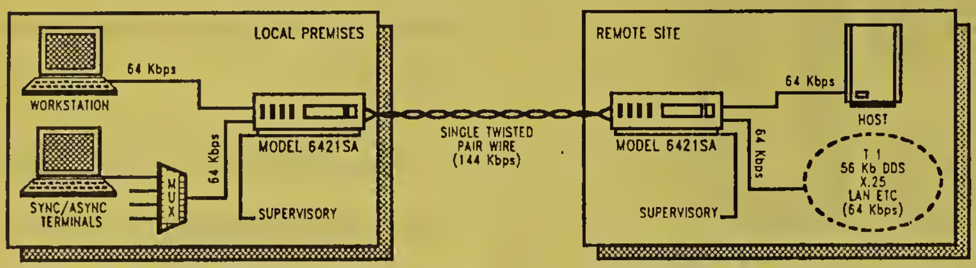

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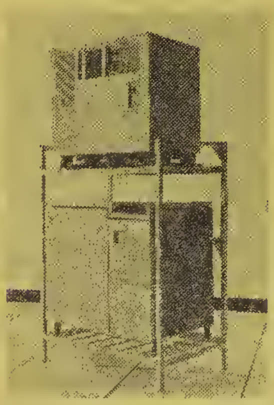

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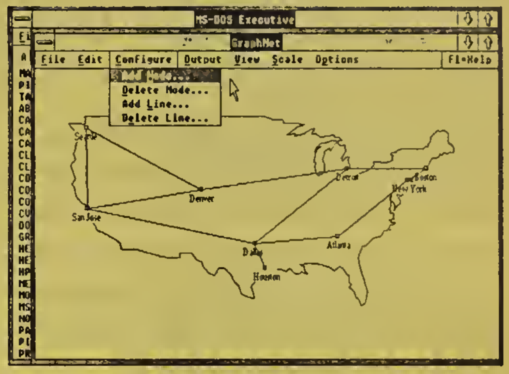

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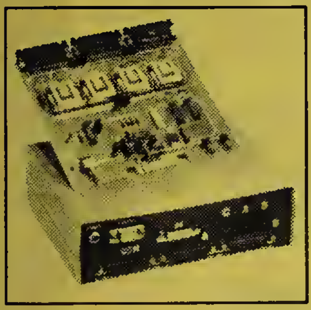

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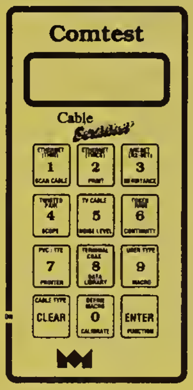

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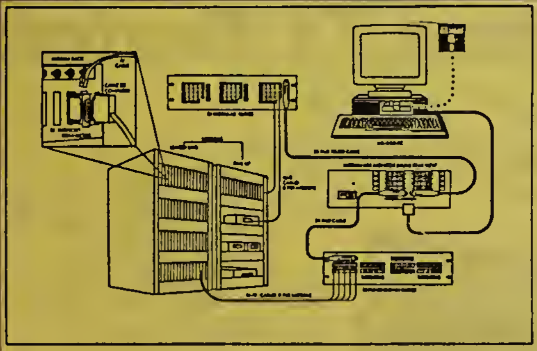

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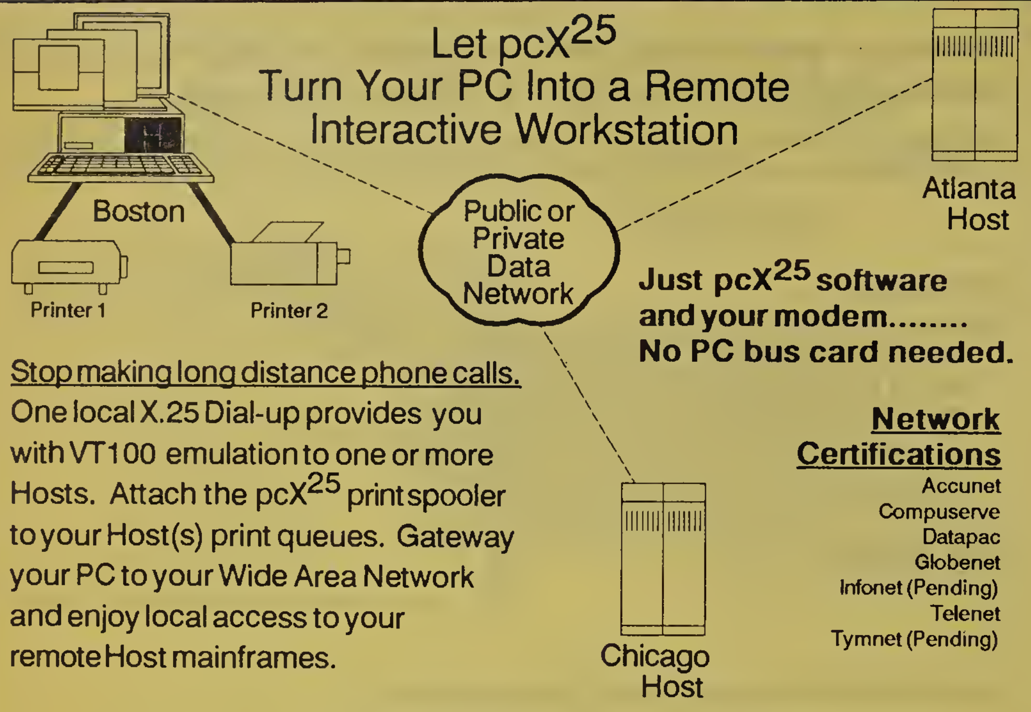

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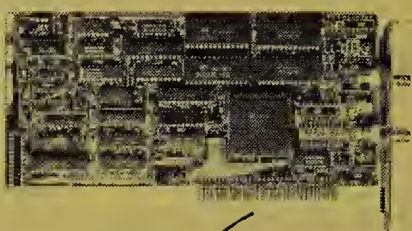

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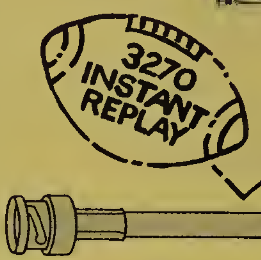

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A picture of health

continued from page 30

departmental systems (for example, a request for a hospital laboratory to run a test on a patient).

- From the laboratory system once the results of the test or clinical procedure are available.
- From the patient accounting system once the test or clinical procedure has been performed, so the patient can be billed for the treatment.

According to a draft of the HL-7 standard, it is closely modeled after existing protocols in the ANSI X12 electronic data interchange standards but with some variations. For example, X12 standards apply primarily to batch transmission of data among systems, which is inappropriate for on-line interfaces, such as those that HL-7 tries to define.

Unlike the X12 standard, HL-7 accommodates the on-line exchange of individual transactions in its local network interface.

Many issues are not addressed — including how queries would be performed among systems. SQL has emerged as both an ANSI standard and a de facto standard from IBM. However, SQL is only applicable for relational data base management systems and therefore will not meet the needs of a user retrieving records stored on file-oriented applications or nonrelational DBMSs.

Another issue surrounding HL-7 concerns addressing in a networking environment. The current HL-7 standard does not specifically define how addressing will occur but does provide certain data fields in the headers of all HL-7 messages.

The MEDIX committee

The mission of the MEDIX committee is also to define an application-level protocol. The MEDIX committee is evaluating the incorporation of HL-7 transaction definitions into the efforts of the Institute of Electrical and Electronics Engineers.

MEDIX varies from the HL-7 approach in that it uses the ISO Abstract Syntax Notation One (ASN.1), which defines a standard notation and a standard representation for data types and values. The decision was made by the HL-7 committee not to use ASN.1 due to its complexity.

The initial focus of MEDIX will be the transactions needed to support a patient care information system. Eventually, MEDIX will encompass a wider scope, including the transfer of medical records between different vendors' systems.

The MEDIX committee is also considering the need to incorporate electronic medical records and smart cards that will allow the transfer of those records as well as image information between hospitals. It's still an open issue whether such an exchange of medical record information is in the initial scope of the MEDIX committee.

By 1990, the MEDIX committee plans to have a draft standard ready for ballot within the IEEE. After IEEE approval, the standard will be submitted by ANSI for approval as an ISO standard.

There are also several other groups working on health care standards. The American Society for Testing and Materi-

(continued on page 40)

Other medical standards committees

continued from page 30

The ASTM has greatly widened its scope since the early 1900s, when it was formed. Besides standardizing items such as garbage trucks, playground equipment and hip replacement joints, the ASTM is also involved in efforts to standardize interfaces between computers and laboratory test equipment, such as chemical analyzers and hematology instruments.

"We want to be able to take a new instrument into the lab, plug it into the lab information system and, with a minimum of effort, have it work," says Bob Megargle, professor of analytical chemistry at Cleveland State University and chairman of the E31 committee, the ASTM committee on computer system standards.

Under the review of a subcommittee called E31.14, the laboratory instrument interface is still in the initial stages of a draft standard. It will specify simply how to connect the lab device to a computer. However, last year, a second committee, the E31.11 committee, developed a standard for how the laboratory computer sends out over networks the information it collects from the instruments. It is a hardware-independent standard that deals with message content, rather than the mechanism of transfer, according to Megargle.

Tying devices to the net

Unlike other groups, which are working on computer-to-computer links, IEEE 1073, which is working on the Medical Information Bus standard, is trying to connect medical devices to computers.

"For example, at the patient's bedside you might have some monitors for heart rate and blood pressure," explains David Franklin, professor of computer science at Southern College of Technology in Marietta, Ga., and chairman of IEEE 1073. "You might have some infusion pumps, a ventilator; in the operating room, you might have an anesthesia machine.

"The idea is to provide a plug-compatible interface, so that you can run a cable between the pump or monitor and a computer system, and collect data," he says. "We want the clinical person, nurse or doctor to walk into the room with the pump or whatever, plug in the cable and have the network automatically detect the device, establish communications with it and begin collecting data from it. That's the minimum functionality we want to provide. The bottom line is to connect them to the computer and collect data from the device."

— *Kenneth Riley and Alison Conliffe,*
NW *assistant features editor*

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A picture of health

continued from page 38

als (ASTM) is working on a standard for the exchange of laboratory test data. The American College of Radiology/National Electrical Manufacturers Association is developing a standard for Picture Archiving and Communications Systems such as CAT scans and X rays. And IEEE 1073 is developing the Medical Information Bus: Architecture and Application Communication Specification. (For more information on these standards, see "Other medical standards committees," page 30.)

Each of these committees is currently focusing on an initial subset of standards that will allow migration of applicable health care standards into a common reference model.

Attempts to ensure compatibility are being made among the various standards committees. However, since the scope of information to be covered is so great, agreement on more than a single subset of standards is highly unlikely in the next two years.

Planning

Trends toward distributed computing will affect health care operations significantly, resulting in increasing installation of multiple vendors' hardware and specialized application software in organizations.

A key concept that many health care organizations are now beginning to realize is that most health care information systems will not be able to operate in an independent or stand-alone manner.

Information systems planning involves the development of an information architecture, which is a long-term process. Information must be viewed as a strategic resource and planned on an organizationwide basis.

Effective information systems planning for health care organizations requires that management take a proactive approach to understanding the implications of future technology. This is necessary to take advantage of these advances and make sound investment decisions.

Distributed processing and shared data bases over high-speed networks are significant and challenging goals for today's health care community, but they will not happen overnight or have immediate paybacks.

Standards offer the potential for interoperability, but these standards will be slow in developing and even slower in being accepted by vendors.

Apple execs respond to criticism

continued from page 1

to introduce products. But we won't rush anything to market before it's ready."

However, Al Cini, president of Computer Methods Corp., a Marlton, N.J., end-user consultancy and Apple reseller, said, "On a scale of one to 10, I'd give the DEC-Apple alliance a four."

At last August's MacWorld Exposition in Boston, Apple and DEC reiterated plans to tie Macintoshes and AppleTalk networks into DEC networks ("DEC, Apple offer software scheme at MacWorld Expo," *NW,* Aug. 8, 1988).

Apple and DEC said they would create two tiers of products: basic connectivity products such as file servers and more complex net management and joint mail facilities.

But for users anxiously awaiting the first fruits of the alliance, no news is not good news.

"I can understand what DEC and Apple are trying to do long-term, but they're not addressing today's connectivity problems," said Mike Kennedy, manager of computer and network services at Sterling Research Group, a division of Sterling Drug, Inc. in Great Valley, Pa.

Hirshberg and Blake White, Apple's DEC connectivity manager, both said they understand users' concerns about product availability. "They're excited and impatient, but we do recognize the need for nuts and bolts connectivity moving up the product line," Hirshberg said.

The first offering the alliance plans to deliver will be VAX-based server software that runs the AppleTalk Filing Protocol. It will enable a VAX to act as a server for Macintoshes while also permitting Macintosh users to share VAX services and files.

> "On a scale of one to 10, I'd give the DEC-Apple alliance a four," Cini said.

▲▲▲

Apple also plans to deliver, before year end, a software gateway that runs on the VAX and converts the AppleTalk Filing Protocol to the DECnet protocol.

The gateway will enable Macintosh users to access remote DECnet nodes, according to Hirshberg.

White and Hirshberg emphasized that the most significant aspect of the alliance is the relationships being built with third-party software developers.

Hirshberg said the two companies are on schedule to deliver VAX server software by August. Network management and joint mail facilities will be available sometime in 1990, he added.

While Apple officials maintain that the company's ties with DEC are still strong, users cited two major weaknesses in the alliance: One is the lack of products; the other is the absence of Macintosh support for DEC's Local Area Transport (LAT) protocol.

LAT client software for the Macintosh would enable Macintosh users to establish terminal sessions to connect to VAX-based hosts and access basic print and file services.

The second most frequently cited shortcoming is the lack of an electronic mail bridge product that would let Macintoshes and VAXes share E-mail messages.

"The fact is, LAT-compatible software exists for the MS-DOS environment today," he said. "Unless I can get LAT software for the Macintoshes, I won't buy any more of them. I'll use PCs instead.

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T. Travers Waltrip

T. Travers Waltrip is vice president of Telecommunications with the Travelers in Hartford, CT., a position he has held since joining the company in 1983. His current responsibilities include all hardware, software and facilities; all voice and data requirements; and all planning, design and implementation and operations. He manages a team of over 200 professionals and an annual operating budget of $200,000,000.

Charles Lamberson

Charles Lamberson is a systems analyst at E.I. Du Pont de Nemours in Wilmington, DE. He has been involved with data communications for several years, first in mainframe networks and most recently in local area networks. He has just completed leading the effort to install a 700-user Token Ring local area network, which is connected to multiple vendors' mainframes.

William F. Zachmann

Will Zachmann is president of Canopus Research, an information industry market research and consulting company. Formerly senior vice president at International Data Corp., he writes PC-related columns for a number of computer industry publications, and frequently speaks at trade shows and conferences.

Larry DeBoever

Larry Deboever is president of Deboever and Associates, a consulting and seminar company. Larry consults for a number of large clients, including Microsoft, and is currently conducting a DEC-to-IBM connectivity conference.

IBM

IBM will provide an appropriate speaker from its Token Ring Network product management group.

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Managers fight for site licensing

continued from page 21

Systems in Mountain View, Calif.

Scott Oki, senior vice-president of sales and marketing for Microsoft, disagrees. "We should banish the phrase 'site license' to the ozone," Oki said. "It's used too loosely and has a lot of emotion associated with it."

He said Microsoft sales representatives can accommodate large corporate clients that want to distribute volume purchases or upgrades electronically. However, the program is not widely publicized, and the minimum purchase requirement is admittedly high.

That won't do for some customers that feel so strongly about site licensing that they boycott software providers that insist on sticking to shrink wrapping.

Site makes right

Several years ago, Big Eight accounting firm Ernst & Whinney rejected Lotus 1-2-3 as the standard spreadsheet for its 23,000 employees because Lotus was not offering site licenses.

Computer Associates International, Inc. and WordPerfect Corp. did offer a licensing option, so the accounting firm selected SuperCalc and WordPerfect as its two main applications. The vendors provide a master disk that Ernst & Whinney uses to distribute software internally, and documentation is purchased separately as it is needed.

The major reason for insisting on site licensing was price, said Alex Kask, a partner at Ernst & Whinney and senior manager of its computer audit department. Site licenses also save the company time and money when it is upgrading a version of software.

Margaret Cole, a microcomputer manager at General Dynamics Corp. in Pomona, Calif., said, "We're willing, in many cases, to pay the same price for one [master disk] as we are for 5,500 packages because it costs me probably 180% of the cost of an upgrade [package] to implement that upgrade."

Gregory Jones, director of information systems management for the federal government's Securities and Exchange Commission, concurred. "I hate to even think what the dollar savings would be if you could buy and upgrade a site license instead of individual shrink-wrapped packages," he said.

Even a free upgrade can be costly. "I have a VAX running AlisaTalk, and I could just put the new software there and let people download it" if it was site licensed, GTE's Thompson said. Instead, he said he has to collect the individual copies of the old version and distribute individual copies of the new one.

By contrast, a site-license upgrade could be implemented across a local network after hours, said Marc Seeba, a senior engineer at Ford Aerospace & Communications Corp. in San Jose, Calif.

Strength in numbers

The major vendors are balking partly because there is more money to be made selling individual packages, partly because they fear losing control of the disk-duplication process and partly because they don't want to jeopardize their existing distribution channels.

However, another barrier to site-licensing programs is that one size doesn't fit all.

According to Leslie Fiering, an assistant vice-president and microcomputer manager for Bankers Trust Co. in New York, there is no agreement about the ideal site-licensing deal. "If 50% of the market wanted one type of site license," Fiering said, "there isn't a vendor alive that wouldn't go along with it."

Midsize companies or divisions of larger enterprises are often cut out of the site-license programs that currently exist because the minimum purchase requirement is too high.

Despite all the user sentiment in favor of site licenses, the leading word processing vendor, WordPerfect Corp., is moving away from them. The company is honoring existing limited site licenses — some of which have several more years to run — but is not offering new ones.

Large corporate accounts will be able to make direct volume purchases of 500 units or more, but they will be buying complete individual packages, said Brad Jackman, director of marketing for WordPerfect's large accounts.

"Our objective in 1989 is to focus more on the distribution channel," Jackman said. "We found we were spending way too much time negotiating contracts, and we'd rather be providing customers with product support."

Computer Associates, with its background in selling mainframe software, doesn't agree with WordPerfect's strategy.

"We go to a company, find out how they buy software and figure out the best way for them to buy our software," said Brett Bullington, vice-president of sales and marketing for Computer Associates' personal computer products. Computer Associates' limited site licenses and volume-purchase agreements start at 25 units.

Software companies with roots in the shrink-wrapped market are resisting such programs because they are structured to deal with the reseller community rather than the large corporate environment, Bullington said.

Setting up a site license in today's increasingly networked computing environment "involves a different way of buying and selling software," Bullington added. "You have to be able to establish a strong rapport with your clients and become more intimately involved with them." ◻

Calendar

Feb. 27-March 1, San Francisco — Desktop Publishing and Beyond. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402; (213) 394-8305.

Feb. 27-March 3, Cincinnati — Basic Systems Analysis. Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138; (216) 243-6900.

Feb. 28-March 2, Boston — NETWORLD 89. Contact: H.A. Bruno, Inc., 385 Sylvan Ave., Englewood Cliffs, N.J. 07632; (201) 569-8542.

Feb. 28-March 2, Milwaukee — Working With Personal Computer Local Area Networks. Contact: University of Wisconsin, Center for Continuing Engineering Education, 929 N. Sixth St., Milwaukee, Wis. 53203; (414) 227-3120.

March 1-3, Dallas — Fiber Optic Communications. Contact: International Communications Association, 12750 Merit Drive, Suite 750, LB-89, Dallas, Texas 75251; (800) 422-4636.

March 6-9, Washington, D.C. — Federal Information Systems Conference & Exposition. Contact: National Trade Publications, 313 S. Patrick St., Alexandria, Va. 22314; (800) 638-8510.

March 6-10, Miami — 5th International Conference on Artificial Intelligence Applications. Contact: CAIA '89, Computer Society of the IEEE, 1730 Massachusetts Ave. N.W., Washington, D.C. 20036; (202) 371-1013.

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MCI View, switched 56 bow

continued from page 1

its INMS strategy at the International Communications Association's annual conference in Anaheim, Calif., last May ("MCI service gives users net control," *NW,* May 23, 1988).

At that time, the company said a NetView-compatible service would be introduced in the near future.

The MCI View service will initially be made available to users of MCI's Vnet virtual private network service and Terrestial Digital Service (TDS) 1.5, MCI's T-1 offering, said Stuart Mencher, MCI's senior vice-president of corporate marketing.

As user demand grows, MCI will provide net management services under the INMS umbrella as options to its other services, he said. The carrier plans to work with other network management equipment vendors, such as Digital Equipment Corp., to develop services for customers with net management systems other than NetView, he said.

MCI View allows users to monitor MCI network performance and to view circuit alarm information that appears on network control workstations or terminals. Information about a user's MCI lines is transmitted by NetView/PC software at MCI's point of presence over a 9.6K bit/sec private line to NetView on the user's host. The system does not let users fix problems via two-way communications, though that is a goal for the future, Mencher said. Currently, if a user spots a problem with his MCI circuits, he notifies MCI to fix the problem.

In some cases, MCI may have already begun to resolve a problem before being notified, but the user will know about it sooner with MCI View and will be able to alert end users of the situation, said Jim Scarbrough, who has been using MCI View since last August. Scarbrough is telecommunications manager for Texaco, Inc.'s Houston-based Information Technology Department.

MCI has been testing the product at beta sites since the middle of last year.

A strategic edge

MCI View gives users a strategic edge in that they can more efficiently control their networks, said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm based here.

MCI View is priced at a flat monthly fee of $2,000 for either Vnet or TDS 1.5 users. The combined fee for use of both services is $2,500. An MCI View installation fee of $1,500 is charged for users of either Vnet or TDS 1.5. The installation fee for users of both services is $2,000. MCI charges no usage fees.

Switched 56K

In addition to unwrapping MCI View, MCI became the third major long-distance carrier to offer a switched 56K bit/sec service. The new offering will initially be available on T-1 access lines to users of Vnet and outbound Prism I voice services (see "US Sprint plans delivery of switched 56K services," page 8).

The service will be offered to a limited number of customers in the second quarter, with full commercial availability planned for the third quarter. Service will be available in all of the 126 T-1 access cities now served by MCI's Digital Data Network (DDN), Mencher said.

The service will enable users to send facsimile, data, video and secure voice transmissions. Applications for the switched 56K bit/sec service include emergency backup for dedicated DDN users, Mencher said.

According to MCI, its offering costs about the same as US Sprint's and is less expensive than AT&T's service. MCI said a 1,000-mile call using an MCI 56K bit/sec switched line costs between 13 and 18 cents, whereas a comparable AT&T call costs about 85 cents.

An AT&T spokeswoman said a 56K bit/sec switched call costs between 26 and 81 cents under a volume pricing plan, but she added that prices can vary depending on volume and time.

MCI's switched 56K bit/sec service will be priced on a usage basis under existing Vnet and Prism I rates. Eventually, these calls will be separately identified on users' bills.

Mark LaRow, senior manager at Network Strategies, a consulting practice of Ernst & Whinney in Fairfax, Va., said the new MCI services are a sign that the carrier is trying to become a full service provider. "AT&T has long been able to promote itself as a full-featured vendor," he said. "MCI is trying to do the same."

MCI also said it will have Common Channel Signaling System 7 fully deployed in its network before the end of March.

AT&T to work with UK, Japan

continued from page 6

ISDN service for AT&T customers will be through the same facilities that support the carrier's Accunet Switched 56 service.

Strum added that it is AT&T policy to make pricing for international services similar to domestic offerings.

He declined to elaborate further on AT&T's pricing strategy for international ISDN or the kinds of services it will offer.

Momentum-builder

Users at the ICA seminar praised the announcement.

"This new international aspect puts tremendous pressure on the regional [Bell holding] companies to get their ISDN offerings together so they can take part," said Jerome Satkus, director of telecommunications at Harvard University Medical School in Cambridge, Mass.

Some users, such as George Fallat, special projects coordinator with E.I. du Pont de Nemours & Co., said they would consider buying the service.

"To the extent that I can use switched ISDN for cost-effective, reliable international communications, it is attractive as a replacement for our private network," Fallat said.

Prime, Novell to jointly build

continued from page 2

running Sun Microsystems, Inc.'s Network File System (NFS) software or the Transmission Control Protocol/Internet Protocol.

This enables users to easily swap files between Unix-based systems and NetWare local nets. Currently, Prime's minicomputers support only TCP/IP. Prime is also working to make its minicomputers NFS-compatible.

The NetWare file server for the EXL line is expected to ship later this year. The companies must first port NetWare over to the EXL hardware so it can issue commands directly to the hardware and speed network server processing. This will allow the EXL to support a larger number of users and process file storage or retrieval requests faster than existing NetWare servers, Kokos said.

Both NetWare products will support NetWare-attached DOS- or OS/2-based personal computers and Apple Computer, Inc. Macintoshes running NetWare for Macintosh software. Prime is also developing Unix-based NetWare client software that will link Unix-based workstations to NetWare file servers.

With the agreement, Prime is beginning to implement a client/server architecture, which supports distributed applications.

The agreement continues an industrywide move to provide connections between local nets and larger systems, analysts said. "To survive in the coming world, you need to conform to standards — be interoperable and connect to other things," said Paul Cubbage, associate director of Dataquest, Inc.'s Unix software service. "The easiest way to do that is with Unix." Dataquest is a research firm in San Jose, Calif.

Prime will sell both new NetWare products through its direct sales force and hopes to sign on Novell resellers and distributors.

AT&T unwraps crossbred PBX

continued from page 1

ers. The two also use the same port cards, circuits packs and cabinets.

Generic 1 can be configured to serve 100 to 1,600 lines, and Generic 2 can support as many as 30,000 lines. The 100- to 30,000-line range is similar to that covered by the System 75 and System 85 combined.

Both Definity models are based on the same architecture, while the System 75 and System 85 are based on dissimilar architectures. With the Definity, users can expand a Generic 1 to a Generic 2 by replacing the smaller switch's Intel Corp. 80286 microprocessor with the AT&T 501CC, adding port cards and circuit packs, each supporting eight digital or 16 analog links.

Formerly, a System 75 user that outgrew that switch had to replace it with the larger System 85.

"We needed a consistent architecture across our entire PBX product line to [smooth over] a seam between the System 75 and the System 85," said Jack Bucter, AT&T product management and marketing vice-president.

AT&T will continue to market, support, service and develop enhancements to the System 75 and System 85, according to E.G. DeNigris, switching systems product management director for AT&T. System 75 and System 85 users can retain 80% to 90% of their switch hardware if they upgrade to Definity, Bucter said.

AT&T said prices for Definity Generic 1 and Generic 2 are equal to those of comparable System 75 and System 85 PBXs. System 75 users can upgrade their switch to Definity Generic 1 for $8,500. System 85 users can upgrade to Definity Generic 2 for $35,000. Definity Generic 1 will be shipped next month, and Definity Generic 2 will be ready in July.

Positive reaction

"What AT&T showed far exceeded my expectations," said Edward Fontenot, president of the System 85 Users Group and technology vice-president for Rockefeller Group Telecommunications Services, Inc. in New York. "I've got two System 85s that I plan to upgrade to Generic 2s as soon as possible.

"I've already spoken with at least six other members of the users group who have placed orders for Definity," Fontenot said.

Loyola University of Chicago has contracted with AT&T to install a Definity-anchored voice/data network to serve three campuses. "We selected the AT&T Definity because it combines the strengths of two mature, proven technologies," said Arthur Krumrey, information services assistant vice-president for Loyola.

Analysts saw the AT&T announcement as far more than just a product introduction.

"AT&T [detailed] its PBX strategy for the coming years. That makes it easier for users to make intelligent buying decisions," said Mark Ricca, vice-president of The Eastern Management Group, a Parsippany, N.J.-based research firm.

Definity Generic 1

A Definity Generic 1 system operating at full capacity requires two cabinets. One cabinet houses the system's processor, memory, interfaces for add-on systems, software and initial circuit packs, and the other houses the balance of the circuit packs. The cabinets can be located up to 1.8 miles apart and are linked with fiber-optic cable.

As an option, users can install duplicate processors and other redundant components. This duplication of critical switch parts is designed to ensure uninterrupted service.

> "What AT&T showed far exceeded my expectations," Fontenot said.

Generic 1 can also support AT&T's ISDN Primary Rate Interface card. A switch equipped with the card will allow users to take advantage of Primary Rate Interface-based INformation FOrwarding-2, AT&T's automatic number identification service and Call-By-Call Service Selection features.

Definity Generic 2

Definity Generic 2 requires less space than the System 85. It uses the same high-capacity 501CC processor — which handles switching functions — and time-multiplexed switch (TMS) capability found in the System 85. TMS allows users to connect remote cabinets with fiber.

Both ISDN Primary Rate Interface and Basic Rate Interface cards are optional features with the Definity Generic 2. A new Basic Rate Interface circuit pack supports 12 simultaneous voice and data Basic Rate Interface connections.

Definity Generic 2 features performance enhancements over the System 85, including a combination disk/tape storage system that reduces system reload time from minutes to seconds.

The Definity Generic 2's Primary Rate Interface features include Non-Facility Associated Signaling, which allows one 64K bit/sec D channel to handle signaling for up to 21 Primary Rate Interface links. That frees up other D channels to carry voice and data traffic. Another feature, D Channel Backup, protects against losing the signaling channel.

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